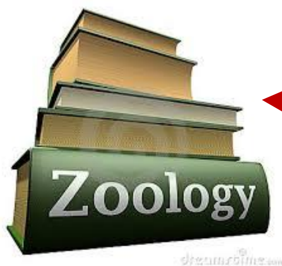
CHAPTER ONE

biology

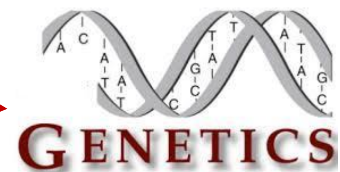


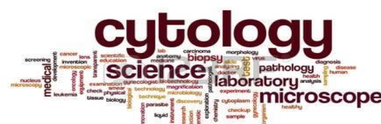


THE CHAPTER

IS ABOUT







Chapter (1)

Introduction to Biology

- Biology is a natural science concerned with the study of life and living organisms, including their structure, function, growth, distribution and taxonomy.
- Biology is study of many varieties of living organisms.

1. SalmonellaTyphimurium (Type of bacteria).
2. PhascolarctosCinereus (koala).
3. AthvriumFilixfemina (common Lady-fern).
4. Amanitamuscaria (fly agarics, a toxic toadstool).
5. AgalychnisCallidryas (red-eyed tree frog).
6. Brachypelmasmithi (Mexican Red-kneed Tarantula).

What is Biology ?



Define Biology: is the science of life or the study of living organisms example: (lion, flowers)

NOTE

Bio → Life

Logy → science (study of)

Define Biologist: is a person who deals with living things and makes experiment with living organisms in the laboratory.

Q/ Explain why not only the biologist but also engineers and other scientists should know the biology ?

Ans: for developing technology for example birds chewed the way of flying and fish showed the swimming under water. Finally people invented plane and submarine.

Branches of biology

- The field of biology today is very large; it has divided into many branches.

Q/How do biologists open up the world of biology?

Ans: by research new branches continue to discover.

Q/ List the branches of biology and explain them?

Ans:

1. **Zoology**: is the study of animals Ex: Lion , Bear.
2. **Botany**: is the study of plants Ex: Rose.
3. **Ecology**: is the science which studies the relationship of living organisms between each other and their environment.
4. **Genetics**: is the study of how genetic in format ion is passed to off spring from their parents.
5. **Cytology**: is the study of cells Ex: onion cell, amoeba, Blood cells.
6. **Microbiology**: is the study of microscopic organisms, such as bacteria and virus.

Q/ How did the Muslim and Arabic scientists contribution in awake of European from their deep darkness?

Ans: They contributed by development the biology and translated many scientific books from Greek to Arabic, and these studies passed to the Europe by the aid of Andalusian.

Q/ List the Muslim and Arabic scientists of biology.

1. **El-jahid** (768 -873 A.C)

a- He observed plants and animals.

b- He classified them according to their *nutrition type*, *ecosystem* and *behaviors.*

c- He published a book in name of **(animals)**.

2. **El-Razi** (850-925 A.C)

a- He made many different studies

b- He suggested the meat cannot rotten by itself and there are some small organisms which cause it.

c- After El-Razi, the scientist Louis Pasteur proved the bacteria Cause the rotten of meat.

3. Ibn-Rusd (1120 – 1189 A.C)

a- He lived in Andalus.

b- He discovered the infection method of smallpox.

4. Ibn El-Nafis (1218 – 1289 A.C)

- He discovered the Pulmonary Circulation.
- He in vented some anatomical equipment which are still used.

Q/ List the contribution of foreign scientists.

1.**William Harvey**

a- English scientist

b- Made some studies on physiology.

c- He proved the pulmonary circulation which discovered by Ibn El-Nafis.

2.**Greg or Mendel**

a- He made many experiments on pea plants.

b- He found how genetic characteristics pass from one generation to the next.

3. Robert Koch

a- He was famous German scientist.

b- He discovered the bacteria which cause tuberculosis

c- He made the vaccine for this disease.

SELF CHECK

B- Review Questions

1.Give two examples around you which related to biology.

Ans: a. singing birds b. smelling of flowers in our garden.

2. List the branches of biology.

a. Zoology b. Botany c. Ecology d. Genetics e. cytology f. Microbiology

3- How did EL-Jahid classified organisms?
Ans: He classified organisms according to
a. their nutrition type
b. ecosystem
c. behaviors

4- What should use to see microscopic organisms?
Ans: We should use microscope to see it.

C. True or False

1. Anton Von-Leeuwen Hook is the first person who discovered the blood circulation. ***F***
2. Mendel have studied on zoology . ***F***
3. William Harvey is the first scientist who discovered the pulmonary circulation. ***F***
4. Micro biology is a branch of science which study on plants. ***F***

D.Matching

a- Ibn Rusd → Discovered the Infection methods of smallpox.
b- Cytology → study on cell
c- Microscope → used to magnify microorganisms.
d- Robert Hooke → observed the cell first time
e- Ecology → study on relationships between organisms.

E. Multiple choice

1.which question should not be asked by a biologist?
A- why leaves change color in the autumn?
B- why a bee sting hurts?
C- what living things are made up of ?
D- why a chalk fell down if we drop it?

Ans: **D**

2.which of the following parts of biology studies the transmission of hereditary in formation from one generation to another?
A- Anatomy
B- Histology
C- Zoology
D- Genetics

Ans: **D**

QUESTIONS ENRICHMENT

Q1- Choose the best Answer.

1-Which one of the following is Not included in study field of biology?
A- Growth of organ isms
B- Classification of Living things.
C- Composition of earth surface.
D- Body structure of organisms.

Ans: C

2- Which one of the following is non-living things?
A- Dog
B- Bird
C- Flower
D- Sand

Ans: D

3- Which branch of biology is study on viruses?
A- Ecology
B- Cytology
C- Microbiology
D- Embryology

Ans: C

4- El-Jahid classified organisms according to their
A- Type of nutrition
B- Size of body
C- Their body structure
D- Region they Live

Ans: A

5- -------------- find out how genetic information pass from one generation to the next.
A- El-Jahid
B- Robert Koch
C- Gregor Mendel
D- Ibn-Rusd

Ans: C

Q2- Fill in the blanks

1. ***Ibn-Elnafis*** is the scientist who discovered the pulmonary circulation.
2. Cytology is the branch of biology which study on ***the cell***.
3. ***Genetics*** is the study of how genetic information pass from parents to their children.

Q3- True&False

1. Many scientific books were translated at Daru-Hikma College in Baghdad. ***T***
2. Biology study on what thing are made of. ***F***
3. Koch bacillus discovered by Gregor Mendel. ***F***
4. Muslim and Arabic scientists helped the Europeans to awake from the deep darkness. ***T***
5. Ibn-Rusd proved the pulmonary circulation. ***F***

DICTIONARY

Living	الكائنات الحية	Function	وظيفة
Structure	المظهر الخارجي	Growth	النمو
science	العلم	Environment	البيئة
plants	نباتات	Animals	حيوانات
laboratory	مختبر	Experiment	تجربة
invented	اختراع	Develop	تطور
field	مجال	Branches	أقسام
discover	اكتشاف	Zoology	علم دراسة الحيوان
Botany	علم دراسة النبات	Ecology	علم دراسة البيئة
Relationship	علاقات	Information	معلومات
Offspring	الاجيال	Cytology	علم الخلية
cell	خلية	Microbiology	علم الاحياء المجهرية
Contribution	مساهمات	Humanity	البشرية
Greek	اليونان	European	الاوربيين
Deep darkness	الجهل والظلام	Nutrition type	طرق الغذاء
Classified	تصنيف	According	حسب/على أساس
Behaviors	سلوك	Rotten	عفن
Proved	اثبت	Cause	يسبب
Pulmonary circulation	الدورة الدموية الصغرى (الرئوية)	Anatomical equipment	ادوات التشريح
Infections	اصابات	Method	طريقة
Small box	مرض الجدري	Foreign scientist	العلماء الغرب
Physiology	علم الفسلجة	Pea plant	نبات البزاليا
Character	خصائص / صفات	Generations	أجيال
Tuberculosis	السل الرئوي	Vaccine	لقاح
Disease	مرض	Translate	ترجمة



CHAPTER TWO





THE CHAPTER IS ABOUT

1. WHAT IS MICROSCOPE
2. KINDS OF MICROSCOPE
3. PARTS OF MICROSCOPE
4. HOW TO USE IT



CHAPTER (2)



Microscope

Biology: it is the study of life and living organisms.

Macroscopic organisms: they are living things which can see them with naked eyes for example: Lion.
Microscopic organisms: they are living things which cannot see them our naked eyes for example: Bacteria.
Biologist: is a person who deals with living things and make experiments with living organisms in the laboratory.

Note: Biologists use 1. magnifying glass 2.microscope

Define Microscope: it is tool use it to see microscopic organisms.

Notes:
- Microscope was first invented by Anton Von Leeuwenhook in the beginning of the 17^{th} century.
- A new microscope was developed by Robert Hooke in 1665.

Q/ Who did invent the microscope?
Ans: Anton Von Leeuwenhook invented the microscope.

Q/ Who did observe Cork cells?
Ans: Robert Hook observed Cork cells.

Using the microscope:

The steps of using the microscope are:
1- Always carry the microscope with two hands, one on the arm and one under near the base of the microscope.
2- Switch on the lamp.
3- Rotate the low power objective into place.
4- Some materials are best viewed in ***dim light*** others in ***bright light***.

5- Put the studying material on the stage.
6- Firstly use ***coarse adjustment*** to see something roughly then use ***fine adjustment*** to see material clearly.

Notes:
- The electron microscope has wide of magnifications it is possible from 10 times to more than 500.000 times.
- The best light microscope magnification about 250 times.

Q/ What is the range of magnifications in electron and light microscopes
Ans: electron microscope 10 times ⟶ 500.000X
Light microscope about 250 times

Parts of the microscope

1- Body tube: passes the light from head to the eyepiece.
2- Rotating head: contains mirrors.
3- Eyepiece: it contains a lens called ***ocular*** that further magnifies the specimen by 10 times.
4- Objective lens: produce most of the magnification:
a- High power lens (blue strip or bond) magnifies 40X.
b- Low power lens (yellow strip or bond) magnifies 10X.
5- Stage: hold the slide and it contains tow clips to hold the slide it's called ***spring clips*** or ***stage clips***.
6- Diaphragm: controls the passage of light through the stage.
7- Arm: supports the lenses and body tube.
The microscope should be carried with one hand holding the arm and the other under the base.
9- Corse focus knob or Corse adjustment: moves the stage up and down quickly.

Note: used to find a specimen when using the low power objective.

10- Fine focus knob or Fine adjustment: used to make small focus adjustment. You must use the high power objective in fine focus.

11- Light source: illuminates the specimen.
12- Power switch: turns the light on and off.

Preparing of objects to observe

*Q/*Why we must cut big objects for observation?
Ans: because we can get and observe more small organisms so the observation will be easily with microscope.

*Q/*How do we prepare of object to observe?
Ans:
1- Put one drop of water on the slide.
2- Place an object on the slide.
3- Lower the cover glass slowly.
4- The excess water should be absorbed with water.

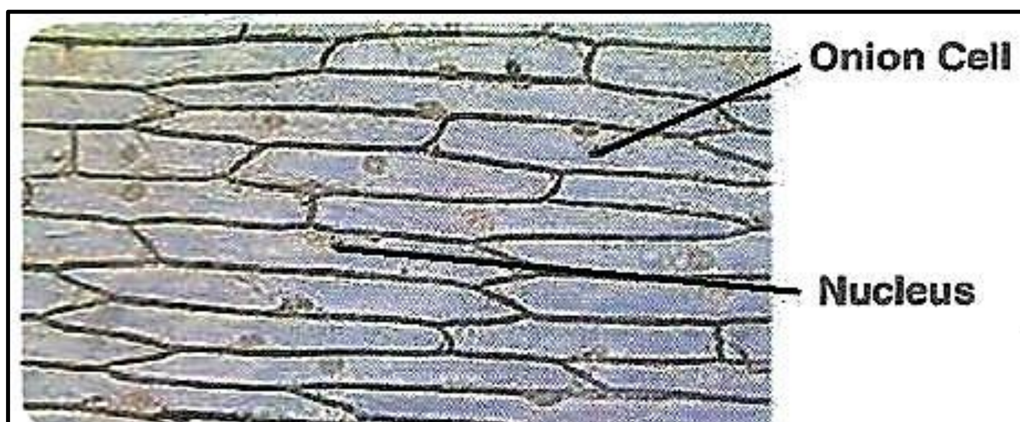
*Q/*Why lower the cover glass slowly on the slide?
Ans: to avoid air bubbles.

Define Magnification: the total magnification of an object is the power of the eyepiece lens multiplied by the power of the objective lens.
Example:
1- Low power objective is often 10**X**

2- Ocular is 10**X**
3- So the total magnification is 10x10=100**X**
This means that image is 100 times greater than its actual object.

Q/ Why we don't use coarse adjustment with objective lens 40**X**,60**X**,100**X**?
Ans: Because coarse adjustment moves quickly up and down so it will cause damage to the slide and may be break it.

Q/ Draw view of cross section of onion leaf in microscope.



SELF CHECK

B.Review questions:

1- Give two examples for each m**i**croscopic and m**a**croscopic organism.

Ans: a- microscopic organisms ⟶ Lion , Bear

b- macroscopic organisms ⟶ Bacteria , Virus

2- List the parts of microscope:

1. body tube	**2. Rotating head**	**3. Eyepiece**	**4. Objective lens**
5. stag	**6. Diaphragm**	**7. Arm**	**8. Coarse focus knob**
9. base	**10. Fine focus knob**	**11. Light source**	**12. Power switch**

3- Why we must cut the big object to observe?

Ans: because we can get and observe more small organisms so the observation will be easily with microscope.

4- What should we use to see microscopic organisms?

Ans: we should use the microscope.

5- How should carry the microscope?

Ans: We should carry the microscope with two hands, one on the arm and one under near the base of the microscope.

C- True or False:

1- The light intensity can be regulated by using diaphragm. ***T***

2- Microscope first invented by LeeuWenhook. ***T***

3- Robert Hooke observed Cork cells. ***T***

4- We use microscope to see macroscopic organisms. ***F***

E- Multiple choice:

1- Which one is used to move the body tube of the microscope a whole lot?

A- Diaphragm

B- Stage

C- Coarse adjustment

D- Fine adjustment

Ans: C

2- What holds the slide on the stage?

A- Diaphragm

B- Stage

C- Coarse adjustment

D- Spring clips

Ans: D

G- Summarize the preparation of a sample to observe in microscope in 4 steps.

1- Put one drop of water on the slide.

2- Place an object on the slide.

3- Lower the cover glass slowly.

4- The excess water should be absorbed with water.

QUESTION ENRICHMENT

Q/ Choose the best answer.

1- Which part of microscope used to observe objects clearly?

A- Stage
B- Light source
C- Fine adjustment
D- Eyepiece

Ans: C

2- What does microscope used for?

A- To see far away objects.
B- To see macroscopic objects.
C- To do chemical experiment.
D- To magnify microscopic organisms.

Ans: D

3- Which one of the following organisms is microscopic?

A- Virus
B- Bacteria
C- Lion
D- Cell

Ans: B

4- Which one of the following equipment has more ability of magnification?

A- Electronic microscope
B- Magnifying glass
C- Light microscope

Ans: A

Q/ Answer True or False

1- Bacteria cell can be observed by magnifying glass. ***F***

2- The eyepiece is a part of microscope where amount of light adjusted. ***F***

3- Anton Von Leeuwenhook is the first person who invented the microscope. ***T***

4- Biologists use microscope to observe microscope organisms. ***T***

5- All types of microscope have same ability of magnification. ***F***

DICTIONARY
CHAPTER (2)

macroscopic	الكائنات الحية العينية (ترى بالعين المجردة)	microscopic	الكائنات المجهرية (لاترى الا بالمجهر)
Instrument (tool)	اداة / آلة	Discovered	أكتشف
Invented	أخترع	Century	قرن (مائة عام)
Developed	تطور	Observed	حظّر (من التحضير)
Cork cell	خلية الفلين	carry	يحمل
Rotate	أدار (تدوير)	Material / objective مادة / الشيء المراد فحصه	
Dim light	الضوء الخافت	Bright light	الضوء الساطع
Regulate	ينظم		
diaphragm	المكثف	Coarse adjustment	المنظم السريع
Fine adjustment	المنظم الدقيق	Eye piece (eye lens)	العدسة العينية
Ocular	بصري	Magnification	تكبير
Specimen	العينة	Arm	ذراع المجهر
Support	يسند / يدعم	Focus	تركيز
Quickly	بسرعة	Low power	قوة صغيرة
High power	قوة كبيرة	Stage	منصة
Hold	يحمل	Allow	يسمح
Pass through	يمر خلال	Base	القاعدة
Power switch	مفتاح التسغيل	Turn off	اغلق (أطفئ)

Turn on	افتح (تشغيل)	Light source	مصدر الضوء
Illuminate	يضيء	Rotating disk	القرص الدوار
Preparing	يحضر	Drop	قطرة
Place	ضع (مكان)	Cover glass	الغطاء الزجاجي
Excess water	الماء الزائد	Absorbed	امتصاص
Total	الكلي	Multiplied	عملية الضرب
Image	صورة	Allow	تسمح
Greater	اكبر	Actual	حقيقي
Compound microscope	المجهر المركب	Onion cell	خلية البصل
Nucleus	النواة	Spring clips	
Stage clips	ماسكات السلايد		

CHAPTER THREE



WATER

SOiL









CHAPTER (3)

Air, Water & Soil

-The Common name (Air) given to Atmospheric gases used in
a. breathing
b. photosynthesis

Define Air:is a mixture of gases which provide a place for animals and other organisms to move, Live and increase in number.

NOTE

Oxygen gas in air provides production of energy from food by organisms.

Define Atmosphere: the atmosphere of Earth is a Layer of gases surrounding the planet Earth that is retained by Earth's gravity.

Q/ How could the Atmosphere protect life on earth?
Ans: the atmosphere protects life on earth by:

1. Absorbing ultraviolet solar radiation.
2. Warming the surface through heat retention
3. Reducing temperature extremes between day and night.
   (the diurnal temperature variation)

Note

- dry Air in atmosphere contains:-
a. 78.09% nitrogen
b. 20.95% oxygen
c. 0.039% carbon dioxide
d. small amounts of other gases.

Atmosphere Layers

The Atmosphere layers are:
1.Exosphere 2.Thermosphere 3.Mesosphere 4.stratosphere 5.troposphere

1- **Exosphere**

Define: The outermost layer of earth's atmosphere which contains few particles that move into and from space.

Q/What does Exosphere contain?

Ans: contains few particles that move into and from space.

2- **Thermosphere**

Define: It is the layer of the atmosphere in which temperature increases with height. It can rise to 1.500 degrees Celsius.

Q/Why doesn't thermosphere feel warm?

Ans: Because of the low air pressure in this layer.

3- **Mesosphere**

Define: it is layer of the atmosphere in which most *meteors* burn up *after* entering Earth's atmosphere and *before* reaching Earth's surface.

4- **Stratosphere**

Define: it is layer of Atmosphere which contains the ozone layer and the layer where volcanic gases can affect the climate.

Q/What does the stratosphere contain?

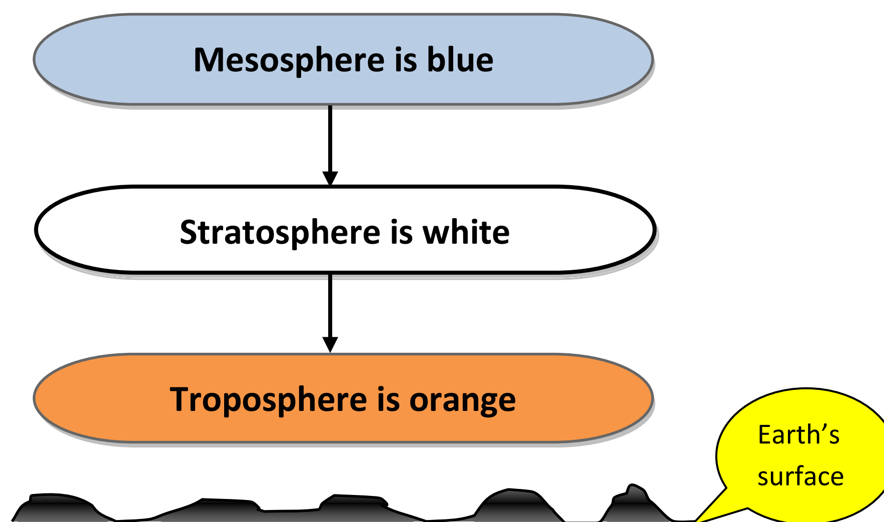
a- contains the ozone layer

b- The layer where volcanic gases can affect the climate.

5- **Troposphere**

Define: It is the layer closet to Earth's surface in which all weather occurs.

Q/ Give the color for each layer of the atmosphere.



BIOCHEMICAL CYCLES

1- OXYGEN CYCLE

Define Oxygen (O_2): It is one of the most important elements required to sustain life, without it we die.

*Q/*What does oxygen give us?

Ans:

1. gives us life by breathing .
2. destroys the harmful bacteria in our bodies without affecting the beneficial bacteria that we need.

Q/ What is the source of oxygen?

Ans: most available oxygen comes from photosynthesis by plants on land and phytoplankton on the ocean's surface.

Q/ How oxygen made in atmosphere?

Ans: Some oxygen is made in the atmosphere, when sunlight breaks down water.

*Q/*where most oxygen stored?

Q/ what's the type of oxygen that's unavailable to use?

Ans: Most oxygen is stored in the oxide minerals of the Earth's crust and mantle called the *Lithosphere*, that bound to rock.

Define Lithosphere: it's an earth layer that contain the crust and mantel and most oxygen is stored in it.

*Q/*Why is most oxygen unavailable for use?

Ans: because most oxygen is stored in the oxide minerals of earth's crust and mantle (Lithosphere) and bound to rock and unavailable for use.

Q/ Who is used oxygen?

Ans: Oxygen is used by

1.animals 2. Plants 3. Bacteria 4.fire 5.decomposition
6. even rusting metal (oxidation)

Define Oxidation: It is the rusting of metal.

Q/ Why our body designed to burn food by oxygen?
Ans: to produce energy.

Q/What's essential role of oxygen in the body?
Ans: our bodies need energy for all body activities from digestion and elimination to thinking and movement.

Q/ What does low oxygen in the body cause?
Ans: The body becomes tired and cellular energy production decreases. This slowly causes the body to decay and many types of illnesses.

NOTE: Both (***1.physical 2.emotional***) of the low oxygen in the body is one of the main ones is cancer.

Q/What does reduce oxygenation?
Smoking which impairs circulation and breathing and thus reduces oxygenation.



2- The Carbon cycle

- all Living things are made of carbon.
- carbon is also a part of 1.*ocean* 2.*air* 3.*rocks*

Q/Why is carbon not still or on the move?
Ans: because the earth is a dynamic place carbon is not still (it is on the move).
- in the atmosphere carbon is attached to some oxygen in a gas called (carbon dioxide)

NOTES

- Plants use carbon dioxide and sun Light to make their own 1.*food* 2.*growth*
- Carbon becomes part of the plant.
- Dead plant gradually buried in soil.
- This dead plant may turn in to fossil fuels made of carbon like:
  1. *coal* 2. *oil over millions of years.*
- When humans burn fossil fuels most of the carbon quickly enters the atmosphere as carbon dioxide.

Define Carbon dioxide: is a greenhouse gas and traps heat in the atmosphere. Without it and other greenhouse gases, earth would be frozen world.

NOTE

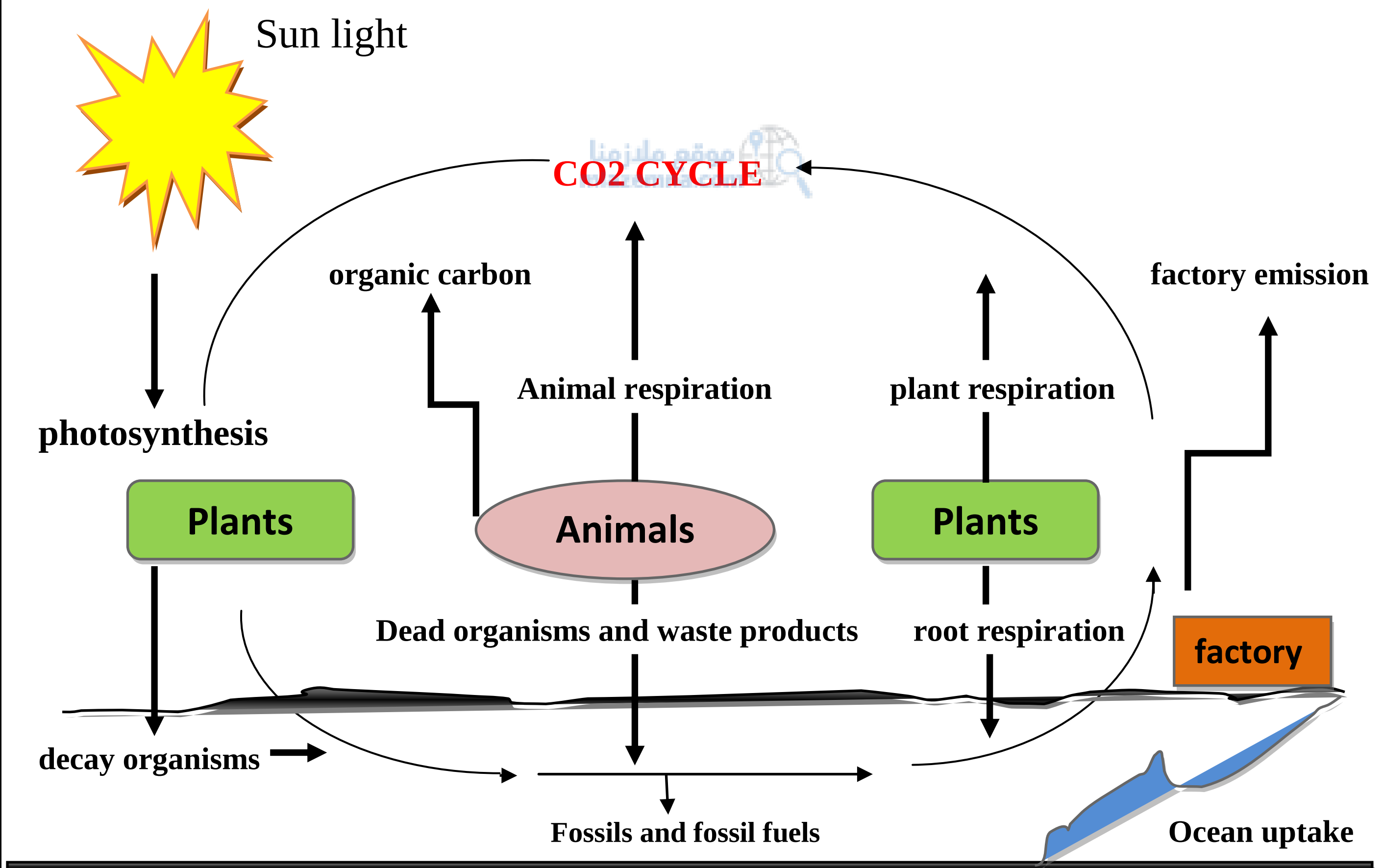
Humans burned so much fuel that there is about 30% more carbon dioxide in the air today than there was about 150 years ago, and earth atmosphere than there has been in the last 420,000 years.

Q/ What is the important of co2 for earth?

1.carbon dioxide is a greenhouse gas.

2.traps heat in the atmosphere without it and other greenhouse gases earth would be a frozen world.

*Q/*Draw the carbon cycle ?



3- The Nitrogen cycle

is one of the most important elements and (78%) of air in our atmosphere is made of nitrogen.

- Your body does not use the nitrogen inhale with each breath but your body needs nitrogen to grow.
- All living things need nitrogen.

Q/ From where does the body get nitrogen?

Ans: your body gets nitrogen *from food* .

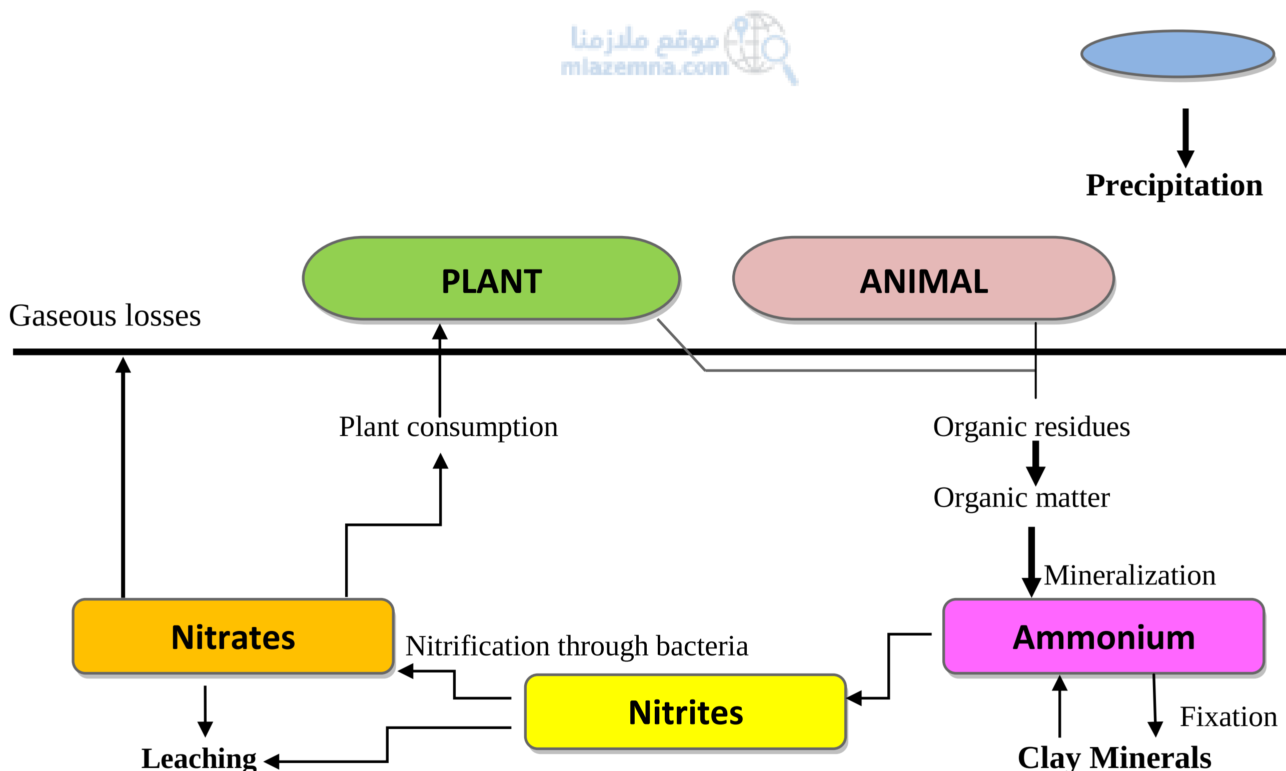
Q/ From where dose the plant get nitrogen?

Ans: All plants get the nitrogen they need *from soil*.

Q/ Why do farmers use fertilizers?

Ans: Many farmers use fertilizers to add nitrogen to the soil to help plants grow lager and faster.

Q/ Draw the Nitrogen Cycle.



Q/ Is there any benefit of forest fires for plant?
Ans: yes, they add huge amount of nitrogen in to the *1.soil* *2.Lakes* *3.rivers* and it's very important to help plants to grow larger and faster by this Nitrogen.

4- the water cycle

Define Water: It is a tasteless, odorless, and colorless liquid that plays many different roles on the earth.

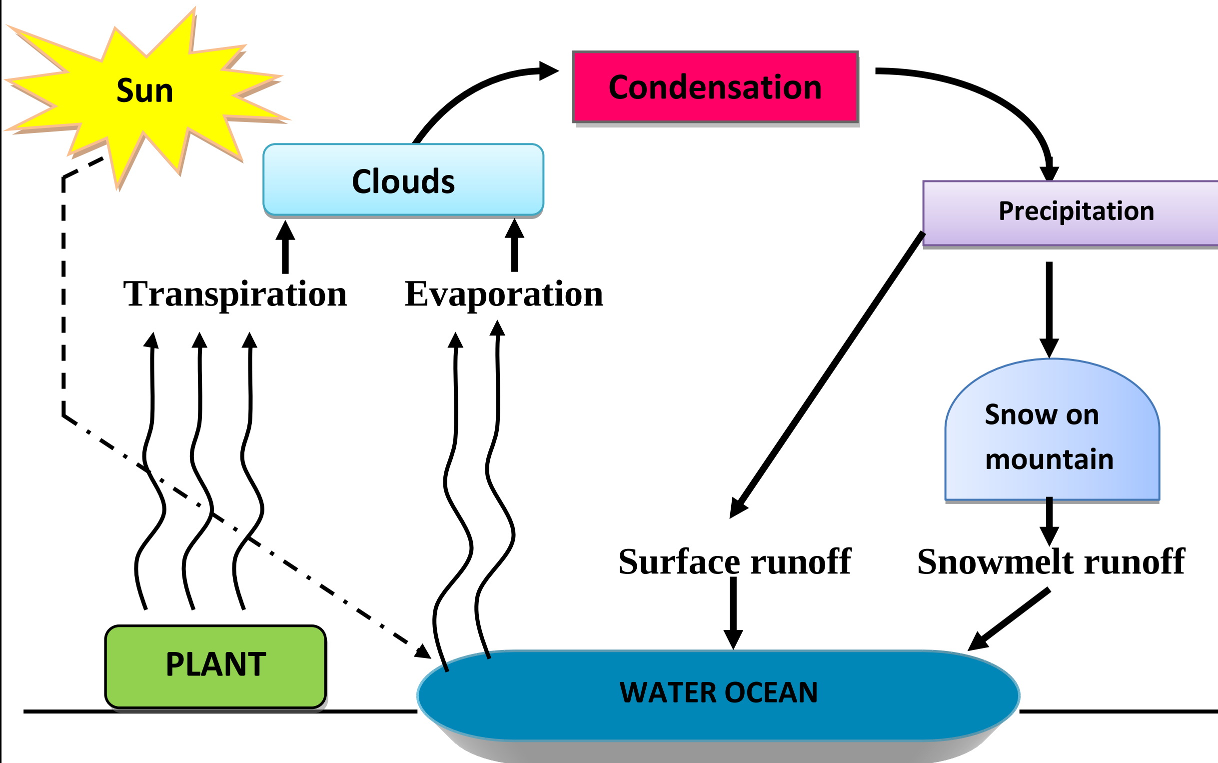
Q/ What are the form of water in not are?
1. At the poles in ice caps.
2. Snow at the tops of high mountains.
3. Liquid in Lakes and streams and in underground.
4.Vapor in the atmosphere.

*Q/*Explain water cycle in nature?
a. most water on earth is in the *oceans* .
the sun's energy causes water to *evaporate* from oceans and lakes in to the atmosphere.
b. plants and animals also *release water vapor* in to atmosphere as they *breath*.
c. when the atmosphere cool, water vapor *condenses* making *clouds* that might produce *rain or snow*.

NOTES

- Water has been recycle in its different forms Ice, Liquid, Vapor for more than 3.5billion years.
- Water (H_2O) it is simple compound of two most common reactive elements, consisting:
1. two hydrogen atoms.
2. single oxygen atom.
And this two hydrogen atoms attached with oxygen atom.
- Water it is very few molecular are *smaller* or *Lighter*.
- Liquid water is the most *extraordinary substance*.

Q/ Draw water cycle in nature?



Q/ What's the uses of water?

Ans: We use water to drink, wash, fish, swim, cook.

Q/ What do Droughts and floods cause?

Ans: Droughts cause famines and floods cause death and disease.

Note

Water makes up over about half of us. Without it, we die.
الماء يكون اكثر من نصف محتوى أو كتلة اجسامنا

Define Evaporation: it is process of transferring the water from Liquid state to the gas state by heating and form water vapor.

Define Condensation: it is the process of transferring water from gas state to liquid state by cooling.

ممكن ان تأتي هذه التعاريف كسؤال يطلب فيه الفرق بين الاثنين فيكون الجواب هو ذكر التعاريف
What is the deference between evaporation and condensation?

Define Water pollution: is the contamination of water bodies (it means liquid water forms) like lakes, rivers, ocean's, aquifers, and grand water.

Q/ How does the water pollution occur?
Ans: Water pollution occurs when pollutants are directly or indirectly discharged in to water bodies without adequate treatment to remove harmful compounds.

Q/ What's the effect of water pollution?
Ans:
1- water pollution affects plant and organisms in these bodies water .
2- damaging individual species and populations
3- affects for all natural biological communities.

Q/ What is the harmful effect of improper water on human health?
Ans: Drinking or using improper water may causes different diseases like cholera, hepatitis , bilharzia and typhoid.
Q/ Numerate the type of water pollution.
Ans:
1.Sewage and waste eater   فضلات واوساخ المجاري والمياه
2.Oil pollution   تلوث النفط
3.Atmosphere Deposition   رواسب وملوثات الهواء الجوي
4.Global warming   الاحتباس الحراري
5.Larine Dumping   ملوثات البحار عن طريق السفن الغارقة
6.Industrial waste   فضلات المصانع
8.Underground leak ages   التلف الحاصل في الانابيب الموجودة في باطن الارض
9.Radioactive waste   الفضلات الاشعاعية

Q/ How can we save our water source?
Ans:
1. Never throw rubbish away how.
2. Use water wisely.
3. Do not throw chemicals, oils, paints and medicines down the sink drain or the toilet.
4. Buy more environmentally safe cleaning liquids for the use at home and other public places.

WHAT IS SOIL

Define Soil: It is a Complex mixture of minerals, water, air, organic matter and countless organisms that are the decaying remains of once-living things.

Q/ What is the benefit of soil at the surface of land?
Ans: Soil is capable of supporting plant life so the soil is vital to life on earth.

Q/What is the form of soil profile?
Ans: It is made of layers, or horizons **(O,A,E,B,C,R)**.

Q/ Numeral or list the layers of soil with explain.
1.**O - *(human or organic):*** mostly organic matter (like decomposing leaves).
(**O**) horizon(layer) is Thin in some soils, thick in others.

2.**A - *(Topsoil):***mostly minerals from parent material (layer) with organic matter incorporated.
(**A**) layer is a good for *plant* and *other organisms* to live.
3.**E - *(Eluviated):*** Leached of clay, minerals and organic matter leaving a concentration of sand and silt particles of quartz or other resistant materials. This layer missing in some soils but often found in *older soils* and *forest soils*.
4. **B - *(subsoil):***Rich in minerals that leached (more down) from (A or E) horizons and accumulated here.
5. **C - *(parent material):***The deposit at earth's surface from which the soil developed.
6. **R - *(bed rock):***Amass of rock such as granite, basalt , quartzite , limestone or sandstone that forms the parent material for some soils if the bedrock is close enough to the surface to weather.

SELF CHECK

CHAPTER (3)

B- Review Question

1. Explain the importance of oxygen?

Ans:

a. gives us life by breathing .

b. destroys the harmful bacteria in our bodies without affecting the beneficial bacteria that we need.

2. Numerate the atmospheric layers from out to in.

Ans:

a. Exosphere
b. Thermosphere
c. Mesosphere
d. stratosphere
e. troposphere



3. Explain how carbon dioxide affects the ice cores?

Ans: Ice cores show us that there is now more carbon dioxide in the atmosphere because these cores became warmer than they have been in the last 420,000 years.

4. Is there benefit of forest fires for plant growth? How?

Ans: yes, they add huge amount of nitrogen in to the *1.soil* *2.Lakes* *3.rivers* and it's very important to help plants to grow larger and faster by this Nitrogen.

5. How can we save our water sources?

Ans:

1. Never throw rubbish away how.
2. Use water wisely.
3. Do not throw chemicals, oils, paints and medicines down the sink drain or the toilet.
4. Buy more environmentally safe cleaning liquids for the use at home and other public places.

C- True or False

1. The topsoil contains mostly organic materials. ***F***
2. We must drink less water to save it. ***F***
3. 80% of atmosphere is oxygen. ***F***
4. Troposphere is the closest layer to the earth. ***T***
5. Carbon dioxide is a greenhouse gas. ***T***

D- Matching

a. Exosphere → Outermost layer of atmosphere.
b. Oxygen → Provides production of energy from food.
c. Nitrogen → Most abundant gas in atmosphere.
d. Fertilizer → Plants use it to grow faster.
e. Soil → Outermost layer of atmosphere.

E- Multiple choices

1. Which one is the usage of oxygen (O_2) in nature?

a- cleans the atmosphere
b- production of energy
c- helps planes to fly
d- helps wind to flow faster

Ans: **b**

2. When human burn fossils most of the carbon enters the atmosphere as -------

a- burned fossils
b- carbon dioxide
c- oxygen
d- coal

***Ans:* b**

3. Which layer of soil rich in minerals moved down and accumulate?
a- R-bed rock
b- B-sub soil
c- A-top soil
d- O-human

***Ans:* b**

QUESTIONS ENRICHMENT

Q/ In which layer volcanic gases effect on the climate?
Ans: the stratosphere layer.

Q/ Which one of the following is not a protection method of atmosphere for earth?
A- Absorption of V.V solar radiation.
B- Warming earth surface through heat retention.
C- Decreases the gravity force.
D- Reducing temperature extremes between day and night.

Ans: C

*Q/*which one of the following atmospheric layers is closest to the earth?
A- Exosphere
B- Troposphere
C- Thermosphere
D- Mesosphere

Ans: B

Q/ Which one of the following types of gas has highest percentage in atmosphere?
A- Carbon dioxide
B- Oxygen
C- Carbon monoxide
D- Nitrogen

Ans: D

Q/ Which one of the followings is not formed from the dead organisms?
A- fuel-oil
B- coal
C- water
D- fossil–fuels

Ans: C

Q/ Fill in the Blanks

1. all Living things are made of ***carbon***
2. carbon is attached with oxygen in a gas called ***carbon dioxide***.
3. carbon ***quickly*** enter the atmosphere as carbon dioxide.
4. plant use ***carbon dioxide*** and ***sunlight*** to make own food.
5. the source of coal and oil comes from ***dead plant***.

Q/ What adds huge amount of nitrogen in to the soil, rivers, lakes?

Ans:

1. nitrogen fertilizers
2. forest fires

Add huge amount of nitrogen in to the soil, lakes and rivers.

Q/ Numerate only the soil layers?

1. O (human or organic)
2. A (Topsoil)
3. E (Eluviated)
4. B (Subsoil)
5. C (Parent material)
6. R (Bed rock)

DICTIONARY
CHAPTER (3)

Common name الاسم الشائع	Atmosphere الهواء الجوي
Mixture of gases خليط من الغازات	Provides يجهز
Production نتيجة ، منتوج	Layer طبقات
Surrounding محاطة / تحيط	Planet Earth كوكب الارض
Retained يحتفظ بها	Earth's gravity جاذبية الارض
Warming تدفئة	Reducing تخفيض
Extremes النهايات	Diurnal temperature variation اختلاف درجات الحرارة اليومي (النهاري)
Extending beyond الامتداد الى ما بعد	Altitude الارتفاع
Rise ترتفع	Air pressure الضغط الجوي
Low منخفض	Meteors نيازك
Burn تحترق	Reaching تصل
Cancer السرطان	Volcanic gases الغازات البركانية
Affect تؤثر	Climate المناخ
Decreases نقصان	Gravity force قوة الجاذبية
Sustain Life مطلوب للبقاء والحياة	Require مطلوب
Source منشأ	Photosynthesis التركيب الضوئي
Phytoplankton العوالق النباتية	Crust قشرة الارض
Mantle غلاف الارض	Bound مرتبط بأواصر / مقيد
Digestion هظم	Elimination الافراز
Thinking التفكير	Movement للحركة
Essential Role قواعد اساسية	Decay تدهور
Illnesses الامراض	Ones منها
Physical اسمي/ عضوي	Emotional التفكير ،حسي ،عاطفي
Tasteless لا طعم	Odorless لا رائحة
Colorless لا لون	Liquid سائل
Poles اقطاب الارض الشمالي والجنوبي	Icecaps جليد
Snow ثلج	Glaciers حالوب
Tops of high mountains قمم الجبال العالية	Vapor بخار ماء
Evaporate تبخر	Release تحرير

Water vapor بخار ماء	Breath تنفس
Cools طبقة باردة	Condenses يتكثف
Clouds غيوم	That might في الممكن
Produce ينتج	Rain امطار
Snow ثلوج	Re cycle يعيد الدورة
Different forms اشكال مختلفة	Ice جليد
Snow ثلج	Liquid سائل
Vapor بخار	Compound مركب
Atoms ذرات	Attached ترتبط
Molecular جزيئة	Smaller الاصغر
Lighter الاخف	Extraordinary substance مادة استثنائية
Transpiration النتح	Precipitation هطول الامطار
Snow Run off ذوبان الثلوج ونزولها الى المحيط	Surface Runoff نزول الامطار مباشرة الى المحيط
Evaporation تبخير	Attached يندمج
Growth النمو	Buried مدفونة
Fossil fuels الوقود المستخرج من المتحجرات	Coal فحم
Oil نفط	Traps يحبس
Heat حرارة	Frozen world عالم متجمد
Fuel – oil الوقود (النفط)	Uptake امتصاص
Decay organisms المحللات (الكائنات الحية المحللة)	Waste products فضلات منتجة من الحيوانات
Auto and Factory emissions دخان او الغازات الناتجة من مداخن المصانع	Respiration عملية التنفس
Farmer الفلاح	Fertilizersالسماد
Soil تربة	Ammoniumالامونيوم
Nitrites نتريت	Nitratesنترات
Nitrification نترجة	Leaching الرشح
Plant consumption استهلاك النبات السريع للنترات	Organic matterمواد عضوية
Mineralization تحويل المواد العضوية الى مادة معدنية	Fixationتثبيت
Clay minerals الاملاح الطينية	De nitrification تحرير النايتروجين
Gaseous Losses خسائر غازية	Precipitation هطول الامطار
Minerals املاح	Leached of clay يترشح فيها الطين
Resistant مقاومة	Accumulated تتكدس وتتراكم
Deposit رواسب	Developed تطورات
Mass of rock الكتل الصخرية	Granit كرانيت
Sand stone الصخور الرملية	Der pollution تلوث الماء

Contaminationتلويث	Lakesبحيرات
Rivers انهار	Oceanمحيط
Aquifers المياه الصخرية أي الموجودة بين طبقة الصخور في الارض	Ground water (الجوفية) مياه باطن الارض
Directly مباشر	Directly غير مباشر
Occursحدوث	Pollutants التلوث
Dischargedتغيير او يزيل	Adequate treatmentالمعالجة الكافية
Removeازالة	Armful compoundالمركبات المضرة
Affects يؤثر	Damagingضرر
Individual species انواع خاصة من الكائنات الحية	Population السكان
Biological communities natural التجمعات البايولوجية الطبيعية	Improper water ماء غير صحي ملوث
Causeيسبب	Throwرمي
Rubbishالنفايات	Any how كما تشاء
Wiselyبحكمة	Chemicalمواد كيميائية
Environmentally safe cleaning منظفات أمنة للبيئة في البيت والاماكن العامة	Count lessلا يحصى
Decayingالمتفسخة	Remainبقايا
Of once living things التي كانت سابقاً كائنات حية	Vitaمهم

CHAPTER FOUR

LIFE AND ORGANISMS



Growth

Movement

Sensitivity



Energy

Excretion

Nutrition

CHAPTER (4)

Life & organisms

- Biology is the science Concerned with the study of life .
- Living thing (Plants – animals) called animate.
- Non Living thing called (inanimate)

Common characteristics of Living things

In nature all Living thing have some Common properties. that share similar characteristics .

a) cellular organization.

- All Living things are made up of cells
- Some of them are composed of only one cell it is called (**unicellulars**)
- Others are made up of many cell it is called (**multicellulars**).

Define cells :- Cells are the basic unit of Life .
- cell Like bricks which are used to build house .

Q/what is the different between unicellular and multi cellular ?
Ans:Some Living things are made frame one cell it mean (unicellular) Like (Bacteria). Some Living things ore mad from many cells (it means multicellular) Like plants and animals.

b)Growth .

all Living things grow.
- Growing in multicellular organisms Performed by increasing in number of cells.
- Growing of plant is (unlimited) .
- Human or animals grow until reach a certain size or (Limited) it means they stop growing.

c) Movement .

- all Living things move.
- some parts of plant can move.
- animals usually move their whole bodies.

Q1/Explain how plants move?
Ans:Plant movement are very slow , their leaves move but they cannot move from one place to another.
Q2/Explain how animals move?
Ans:Most animals can move from one place to another to find their food.
Q3/what's the difference in movement between animals and plants.
Ans: answers of Q1+ Q2

d) Sensitivity.

- all Living things are sensitive.
- they detect to changes in their environment.

Examples:
1. Planets: plants grow towards Light.
2. Animals: a bat detects his food is ready it response by flying towards the food.
3. Human: we detect change in our body and in our environment .we feel hunger, thirst, pain and pleasure.

e) Energy.

- all Living things need energy.

Q/why all Living things need energy?
Ans: because they use energy to maintain the organization , growth and reproduction.
Q/How green plants gets energy? (shape 1)
Ans: Green plants gets energy from sunlight by photosynthesis.
Q/How human and animals and other organisms get energy?
Ans: they get energy from food stuffs
1.they can eat plants
2.they can eat animals
3.or both.

f) Excretion.

Define Excretion:- It is the removal of waste substances from the body.

- all organisms excrete waste materials from the body.

Q/what are waste substances?

Ans: waste substances are un needed or harmful material for Living things and these substance produced during life activities .

Q/give two examples for excretion.

Ans:

1. Human: excrete excess water , salt and some harmful materials by sweating .
2. Plants: excrete excess water , salt by guttation .

Q/what's the difference in Excretion between the human and plant ?

Ans:

1.in human Excretion by sweating.

2.in plants Excretion by guttation.

g) Nutrition.

- all Living thing have to feed to survive .

Q/ Why all living things need food and water ?

Ans: they need food and water for ***production of energy*** .

Q/What's human and animals eat ? why ?

Ans: Human and animals eat plants or other organisms. To produce energy.

Q/Why plants don't need other organisms to produce energy?

Ans: because they can produce their own food by ***photosynthesis***.

Q/ Do plants need to take food from environment ?

Ans: No, plant don't need take food from environment because they can produce ***their own food*** by ***photosynthesis*** .

h) Reproduction.

Reproduction:- is producing new organisms similar to their parents.

Q/why all Living things must reproduction?

Ans: for continuity of their generation.

Note: organisms don't need reproduction to survive because they need Reproduction for continuity of their generation.

*Q/*how can organisms continue their generation?
Ans: organisms continue their generation by Reproduction

i)Death.

Death :-It is the cessation of all biological functions that sustain a Living organisms.
*Q/*How does death Commonly come ?
Ans: Commonly death comes by :
1.biological aging
2.predation
3.malnutrition
4.disease
5.accidents
6.trauma resulting in terminal injury.

*Q/*what happens to bodies of living organisms after death?
Ans: Bodies of Living organisms begin to decompose shortly after death .

*Q/*what is the most Common Causes of human deaths in the world?
Ans: the Common Causes are
1- heart disease.
2- stroke and other Cerebra vascular diseases.
3- respiratory infections.

QUESTIONS ENRICHMENT

Q/what is the difference between Growth and reproduction ?

Ans: Growth: is increasing in number of cells, in mass and volume of the body in organisms.

Reproduction: is producing new organisms similar to their parents.

Q/Explain the mechanism of growth in multicellular .

Ans: increasing in number of cell, in mass and volume of the body in organisms (multicellular).

Q/which one of the following is not common characteristics of Living things?

1.Sensitivity

2.Growth

3.Reproduction

4.Eating food



Ans: (4)

Q/which one of the followings is not true for Excretion?

1.Excretion is removing of wastes.

2.All organisms excrete wastes from their body .

3.human excrete all wastes by sweating.

4.wastes are unwanted harmful substances.

Ans: **(3)**

Q/you respond to Cold weather by shivering. this activity is an example for

1-Growth

2.stimuli

3.waste materials

4.Sensitivity

Ans:**(4)**

Q/which one of the following statements is not true?

1-all Living things grow.

2-all Living things move.

3.Growth is unlimited in animals.

4.human grow by increasing in number of cells.

Ans: **(3)**

Fill in the blanks :-

1- green plants get energy from sunlight by ***Photosynthesis***.

2- all Living things are made up of ***Cells*** .

3- Growth in human is ***Limited*** but in plants is ***unlimited*** .

4- most of animals move from one place to another to ***Find their food*** .

5- organisms don't need ***reproduction*** to survive but they need it for continuity of their generation.

*Q/*match the Common characteristics of life with correct description.

1- cellular organization → **i**
2- Growth → **h**
3- Movement → **g**
4- sensitivity → **f**
5- Energy → **e**
6- Excretion → **d**
7- Nutrition → **c**
8- Reproduction → **b**
9- Death → **a**

a-the cessation of all biological functions that sustain a Living organisms.
b-producing new organisms similar to their parents.
c-Taking food to survive.
d-Removing of waste material from the body.
e-they use it to maintain the organization, growth and reproduction.
f-the detect and respond to changes in environment with it.
g-changing its position in any way.
h-increasing in mass and volume.
i-organisms are all have similar small units of life.

SELF CHECK

B.Review.

1-Explain how plants move?

Plant movement are very slow, their leaves move but they cannot move from one place to another.

2-Numerate the Common characteristics of living things?

a-cellular organization

b-Growth

c-Movement.

d-Sensitivity

e-Energy

f-Excretion

g-Nutrition



h-Reproduction

i-Death

3-Give two examples for excretion?

1- human: excrete excess water, salt and some harmful materials by sweating.

2- plants: excrete excess water, salt by guttation.

4-Do plants need to take food from environments ?

No, plants don't need take food because they can produce their own food by photosynthesis .

5-How can organisms continue their generation?

Organisms continuity their generation by Reproduction.

C. True or False.

1-organisms need reproduction to survive. ***F***
2-Excretion is the removing of wastes from body. ***T***
3-all Living organisms grow, age and die. ***T***
4-all Living organisms give res poses to changes in their environment. ***T***
5-Cell are basic units of Life. ***T***

D. Fill in the blanks correctly.

1.we excrete excess water, salt and some harmful materials by ***Sweating.***
2.the most common cause of human deaths world is ***heart diseases*** .
3.***Growth*** in plants is unlimited.
4.all Living things must ***Reproduction*** for continuity of their generations.
5.plants get energy from sunlight by ***photosynthesis***.

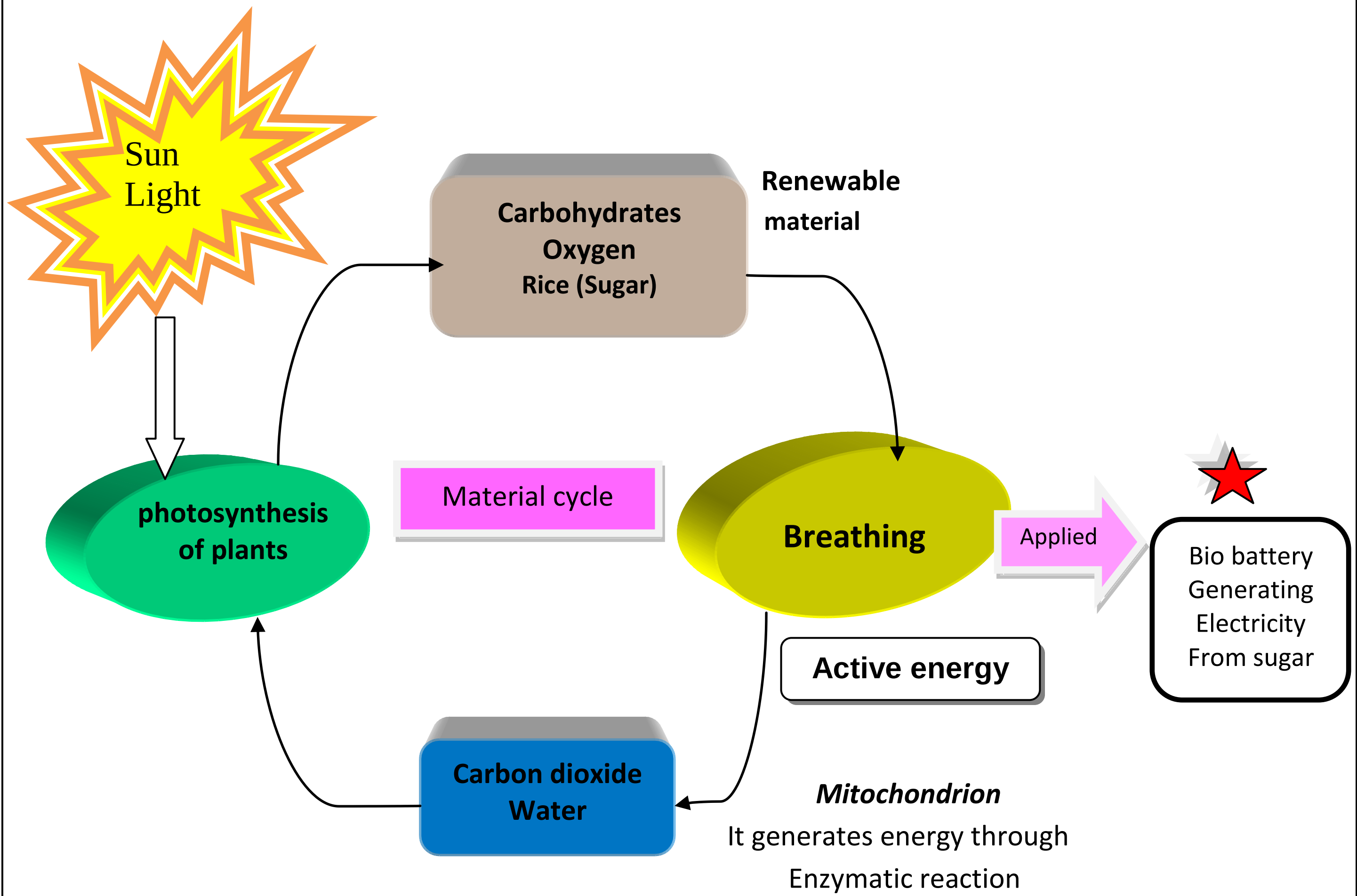
E. multiple choice.

1-which of the following is not common property of Living things?
A-walking
B-Excretion
C-Movement
D-Reproduction

Ans: A

2-organisms don't need-----------to survive but they need it for continuity of their generation.
A-Sensitivity
B-Energy
C-Nutrition
D-Reproduction

Ans: D



SHAP (1) / ENERGY CYCLE

DICTIONARY CHAPTER(4)

Characteristic	صفات، مميزات	Distinguishes	صنفت
Made up	مكونة من	Cells	خلايا
Unicellular	وحيدة الخلية	Multicellular	متعددة الخلايا
Basic units	الوحدة الاساسية	Like bricks	يشبه القرميد
Cellular organization	نظام الخلايا	Growth	النمو
Increasing	زيادة	Limited	محدود
Unlimited	غير محدود	a certain size	حجم معين
Movement	الحركة	Whole bodies	كامل الجسم
Leaves	اوراق الاشجار	Sensitivity	التحسس / الاحساس
Detect	يكتشف / يستطلع	Environment	البيئة
Towards Light	بأتجاه الضوء	A bat	الخفاش
Towards the food	بأتجاه الطعام	Hunger	الجوع
Thirst	العطش	Pain	الالم
Pleasure	السعادة	Energy	الطاقة
Photosynthesis	البناء الضوئي	Food stuff	المواد الغذائية
Excretion	الافراغ / الاخراج	Remove	طرح
Waste	الفضلات	Excrete waste material	اخراج المادة الضارة
Substance	مواد / مكونات	Harmful	مؤذية
Sweating	تعرق	Guttation	النتح (التعرق في النباتات)
Nut ration	التغذية	Survive	(للنجاة او الانقاذ) للبقاء على قيد الحياة
Produce energy	انتاج الطاقة	Own food	طعامه (الطعام الخاص به)
Reproduction	التكاثر	Producing	انتاج
Similar	مشابه	Continuity	لاستمرارية
Generation	الاجيال	Death	الموت
Cessation	توقف / أنقطاع	Commonly death by biological	عادة الموت بايولوجيا
Aging	الشيخوخة	Predation	الضراوة/ الافتراس
Malnutrition	سوء التغذية	Diseases	الامراض
Accidents	الحوادث	Trauma	الكدمات / الصدمات
Decompose	تفسخ / تحلل	Shortly	بعد فترة قصيرة
Heard disease	أمراض القلب	Stroke	السكتة الدماغية

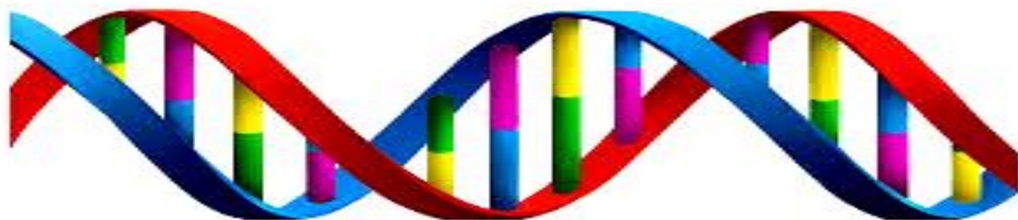
الاصابات التنفسية Respiratory infections	امراض الاوعية الدموية الدماغية Cerebra vascular disease
	قشعريرة (ارتجاف من البرد) Shivering

CHAPTER FIVE

Cellular organization



DNA



Chapter (5)

Cellular organization

*Q/*what are the building blocks of life?
Ans: the building blocks of life are Cells. There are lots of small things in our bodies, that have abilities.
*Q/*what are the cells abilities?
Ans: they have many abilities Like eat, respire and remove waste materials. They help and communicate with each other.
*Q/*Define Cells:-

Cells: Small and functional units, comes together and form our bodies and this unit of life can carry all the function of living thing.
- all organisms are Composed of cells.

Q/ who invented the microscope?
Ans: Anton Leeuwenhoek invented the microscope in the late 1600's .Anton Leeuwenhoek was the first to see microorganisms.

Q/ Numerate levels of cellular organization?
Ans: Levels of Cellular organization
Cell →tissue →organ → organ system →organism
- unit of cell Like unit of Bricks.

Q/ what is the difference between cell and bricks?
Ans:
1.Bricks are nonliving things. They are the units which make up walls, houses and the other buildings, like (house) .
2.cells are Living things. They are the units comes together and form our bodies they can eat, respire and remove waste materials like (plants, animals).

The Cell Theory

Q/ who proposed the cell theory ?

Ans:

1.Matthias Schleiden 2.Theodor Schwann Proposed the cell theory.

Q/ what is the cell theory

Ans:

1.all organisms are composed of one or more cells.

2.the cell is the smallest functional unit of Life.

3.All cell are produced from other cells.

Notes:

- 1665 Robert Hooke put some cork under his microscope.
- the cork was made of brick- Like units.
- Hooke Called each "brick" as a cell.

Q/ List of the structure of all cells?

Ans: all cells are similar structure and every cell has:-

1-plasma membrane (cell membrane): to protect and Limit the cytoplasm.

2.Cytoplasm

a. metabolic activities.

b. cytoplasm has many organelles which have specific function for life of cell.

3.Genetic material (DNA) / (nucleus)

a.to direct metabolic activity.

b.to provide genetic continuity.

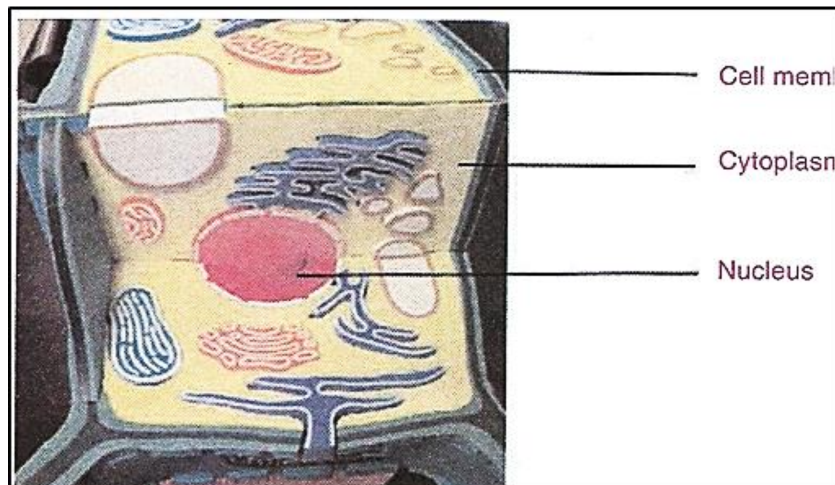


Figure 1 - Cell model -

Types of cells

Cells are categorized basically in two groups according to nucleus:

1.prokaryotic cell

2.Eukaryotic cells

Prokaryotic cells

Always in unicellular organisms such as (Bactria).

Q/ what are the characteristics of prokaryotic cells?

Ans:

1.have no true nucleus.

2.hereditary material is free in cytoplasm.

3.they don't have (Lack)any membranous (with membrance).

4.prokaryotic cells only have ribosome in cytoplasm.

Define prokaryotic cells: types of cells that have no true nucleus and hereditary material is free in the cytoplasm , they don't have any membranous organelles but only Ribosome is present . Ex. Bacteria.

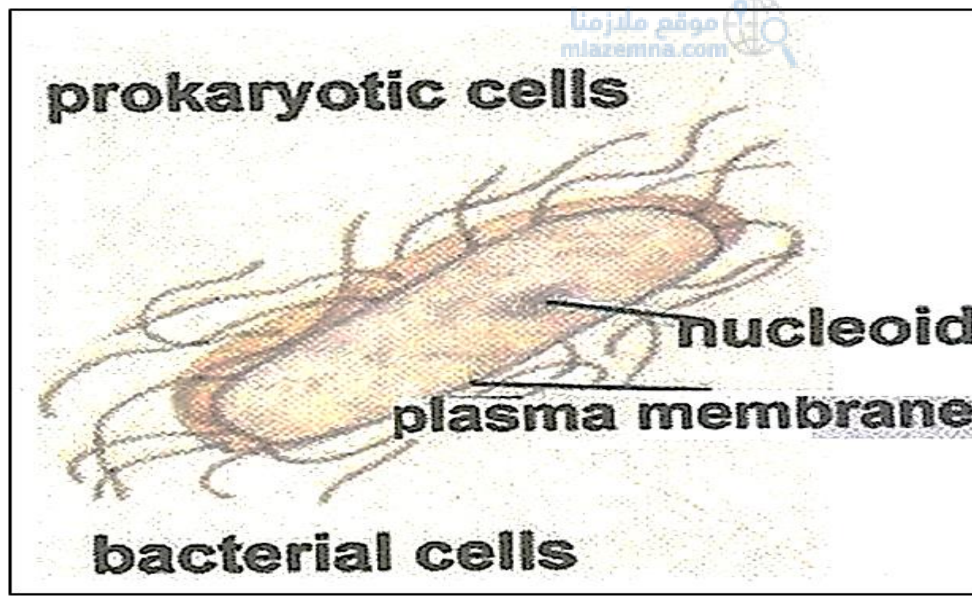


Figure 2

Eukaryotic cells

These types of cells include both:

1.single celled (unicellular) organisms like amoeba and paramecium.

2.Multicellular organisms like human , animals, plants and fungi.

Q/ what does Eukaryotic cell contain?

Ans: Each Eukaryotic cell contains:

1.True nucleus.

2.has many organelles such as mitochondria , ribosome , endoplasmic reticulum , Golgi complex, vacuole, lysosome, chloroplast and centrioles, etc.

Define Eukaryotic cell: it is a type of cells includes both unicellular and multicellular organisms and contains a true nucleus and many organelles mitochondria , ribosome , Golgi complex and lysosome.

Q/ why Elephant is larger than Ant?

Ans: because the number of cells in elephant more than number of cells in Ant, all size depends on number of cells.

*Q/*what does organism's size depend on?

Ans: size if organism depends on number of cells.

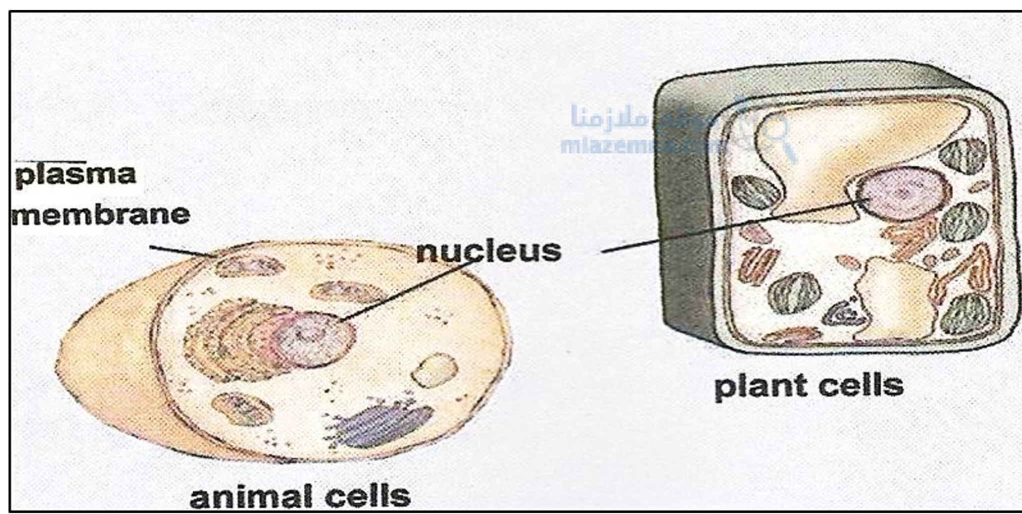


Figure 3 - Eukaryotic cell -

The Cellular structure

All types of Eukaryotic cells have these structures:-

1- cell membrane 2- cytoplasm 3- nucleus

1. Cell membrane

***Define cell membrane*: It's very important structures in cell which forms the outside boundary that separates the cell from its environment and it has different functions.

Q/ what are the functions of cell membrane?

Ans:

a. Cell membrane has tiny pores that let substances in to and out of the cell for Example:- food, water, oxygen can enter the cell and harmful and waste products can heave.

b. cell membrane gives regular shape to the cell.

c. cell membrane protects the cell from external effects.

Note: cell membrane holds parts of cell as a bag.

Define: cell wall **:**it is a rigid (very hard) layer of nonliving material that surrounds the plant cells and some other organisms. It is not present in animal cells.

Q/ what are the functions of cell wall?

Ans :

a. protect and supports the plant cell.

b. gives strength to the plant cell.

C. Has big pores and let passage of big molecules such as starch and protein.

2.Cytoplasm

It is the gel – like structure that is placed between plasma membrane and nucleus and contains cytosol and organelles. All organelles and the nucleus are embedded in cytoplasm.

Define (cytosol) : it is a liquid port of cytoplasm and 90% of cytosol is water.

Q/ what are the functions of cytoplasm?

Ans: The functions of cytoplasm are:

1.for metabolic activities.

2.All organelles and the nucleus are embedded in it.

Note **cytoplasm = cytosol + organelles.**

Organelles

Define organelles: It is a small structure within the cytoplasm of cell.

- (organelle Literally means tiny structure).

the organelles of Eukaryotic cells

1.Ribosomes (protein factory)

Define: they are (protein factory) organelle in cytoplasm. They make proteins and pass it to the endoplasmic reticulum.

- they are smallest organelles of cells.

- Ribosomes are non- membranous organelles.

Q/ what is the reason prokaryotic and Eukaryotic cells have ribosome's ?

Ans: because Ribosomes are non- membranous organelles.

Note/ some Ribosomes can be found freely in cytoplasm.

2.Mitochondria (Power house)

Define: Mitochondria produce most of the energy which cells need. They can reproduce by themselves.

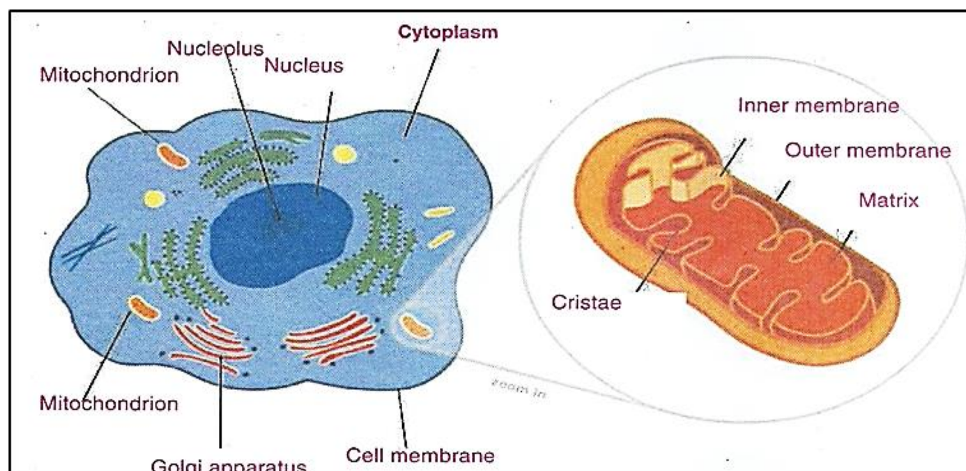


Figure 4

3.Endoplasmic Reticulum:

Define: it is part of cytoplasm (organelles) in Eukaryotic cells, it consists of Long tubules within cytoplasm. It carries protein from one part of the cell to another.

4.Golgi Bodies (mailroom)

Define: it is (organelles) part of Eukaryotic cell (in cytoplasm). They receive protein, package and distribute them to other parts of cell. Also release material to the outside of the cell.

5.Plastids

Define: are special organelles that produce and store food material in plant cells. They also give different color to plants and only plant cells have plastids.

Q/ Numerate types of the plastids?

Ans: There are three main types of plastids:-

A- Chromoplasts :- contain pigments that give color To flowers and fruits. Such as, orange color of a carrot, red color of an apple.

B- Leucoplasts :- types of plastids and they are colorless plastids that od not have any pigment. Their main function is the storage of starch.

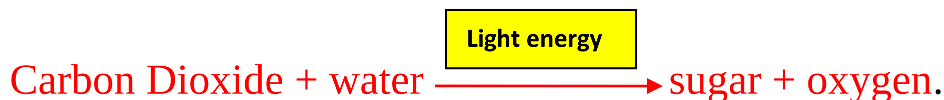
C-Chloroplasts:- types of plastids are fouler mainly in leaf cells (green plants) it contains green colored chlorophyll . and it can produced own food by photosynthesis.

Q/ why are (chloroplast) most important plastids?

Ans: Because they can produce own food by photosynthesis.

Q/ How plant cells (chloroplast) produce oxygen and food stuffs?

Ans: cells produce oxygen and food stuffs by means of photosynthesis.



Carbon Dioxide + water → sugar + oxygen.

6.Centrioles

Define: are special organelles found in human body cells and animal cells. They help the cells to divide.

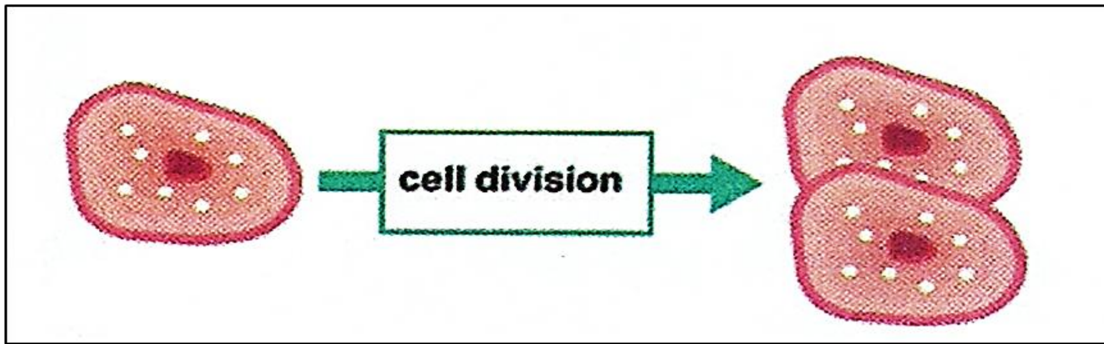


Figure 5 - Cell division -

7.Lysosome

Define: it is part of cell (organelle in cytoplasm). And the main function of lysosome is the digestion of food stuffs and foreign substances inside of the cell. And they are single membranous vesicles that contain digestive enzymes.

8. Vacuoles (storage tanks)

Define: it is water filled sac in cytoplasm. Most plants have one Large vacuole and some animal don't have a vacuole others do. The size of vacuole enlarges during aging.

Q/ What is The function of vacuole?

Ans: vacuoles can store food wastes, salts and water.

3-nucleus (Brain or president):

It is one of the three main parts of a cell. Nucleus is spherical or oval in shape. It is the control center of cells and contains all in formations about cell which are hidden in(DNA) .

Q/what is the function of nucleus?

Ans:

1-Nucleus is the control center of cells.

2.All information about cell is hidden in nucleus in gene tic material (DNA).

- During the cell division all in formation of cell passes to anew generation by genetic material.

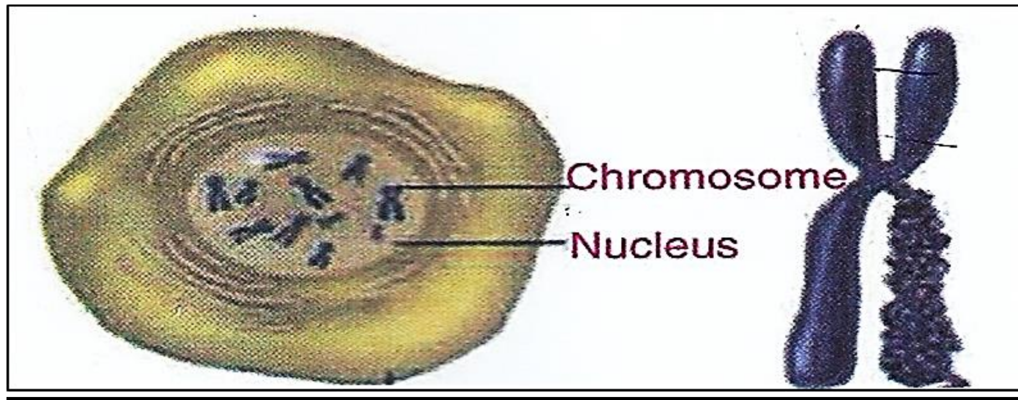


Figure 6 - Chromosome in nucleus -

Note:

1. generally Eukaryotic cells have one nucleus.
2. mature red blood cells do not have nucleus.
3. another cell have more than one nucleus. Example : paramecium kind of unicellular organism has "two nuclei" .

Q/compare between plant and animal cell?

Q/what are the differences between plant and animal cell?

Ans:

Plant cells	Animal cells
1.Have cell membrane 2.Have cell wall 3.Have large Vacuoles 4.No centrioles 5.Have plastids 6.Can produce their own food 7.Generally Come red shaped.	1.Have cell membrane 2.No cell wall 3.Have many small vacuoles 4.Have centrioles 5.No plastids 6.can not produce their own food. 7.oval shaped.

Note: Both (plant and animal) cells have these organelles: ribosomes, mitochondria, Endoplasmic Reticulum, Golgi bodies, lysosome, vacuole and cell membrane

Cell Organization

In multicellular organisms a group of closely associated similar cells are adapted to carry out specific functions and form tissues.

Q/ what is tissue composed of ?

Ans: Each kind of tissue is composed of cells with a characteristic size, shape and arrangement.

-Some tissues are specialized to transport material.
-some contract to enable organisms to move.

Q/ what does tissues associate to form?
Ans: Tissues associates to form organs such as heart or stomach.

Q/ How system formed?
Ans: similar functional organs come together and form systems.Example, stomach, Intestine and Mouth form the digestive system.

Q/ How are organisms formed?
Ans: all system such as circulatory system, nervous system, digestive system and etc. associate to form organisms.

Q/ Draw levels of cell organization?
Ans:
Atoms ➡Molecules ➡ Organelles ➡ Cells➡Tissues ➡Organ ➡Organ system ➡ Organism

Notes:
1.cells: the basic unit of structure of all Living things.
2.Tissues: Each group of specialized cells are organized in to tissues.
3.organs: A group of tissues that work together to perform special functions.
4.organsystem :A group of organs that work together to make an organ system.
5.organisms: All organisms carry out life processes and the different organs to keep the organism alive.

Cells working together

Define Tissues: is a group of cells that work Together to perform a specific job or function.
- the material around and between the cells is also part of the tissue.
Example of tissues (the cardiac muscle)
1.is made of many cardiac muscle cells.
2.cardiac muscle tissue is just one type of tissue in a heart.

Q/ List the types of tissues in animals.
Ans: Animals have four basic types of tissues
1.nerve tissue
2.muscle tissue
3.connective tissue
4.protective tissue.

Q/ List of types of tissues in plants?
Ans: plants have three types of tissues
1.transport tissue
2.protective tissue
3.ground tissue

Q/ what are functions of tissues (all kinds) in plant cell?
Ans:
1.transport tissue moves water and nutrients through a plant.
2.Protective tissue covers the plant.
3.Ground tissue helps the plant retain water and protects the plant against damage.

Tissues working together

Define organ: it is a structure that is made up of two or more tissues working together to perform a specific function is called an organ.
Example: heart is an organ .
1.it is made mostly of cardiac muscle tissue.
2.heart also has nerve tissue.
3.tissues of the blood vessels that all work together to make your heart the powerful pump that it is.
- plants have different kinds of tissues that work together as organs.
Example:
1. A leaf is a plant organ. contains tissue that traps Light energy to make food.
2. stems (organ in plant)
3. roots.

Organs working together

Define organ system: A group of organs working together to perform a particular function is called an organ system.

- Each organ system has a specific job or function to do in the body.

Example: The digestive system.

- Define digestive system: is made up several organs including the stomach, and intestines.

Q/ what is the function of digestive system?

Ans: is to break down food in to small as fuel.

Important note

the digestive system depends on the respiratory and cardiovascular system for oxygen.

Organism:

Define: Anything that can perform life processes by itself is an organism .

SELF CHECK

B-Review Questions

1-write differences between plant and animal cell?

Plant cell	Animal cell
1.have cell membrane	1.Have cell membrane
2.Have cell wall	2.No cell wall
3.Have Large vacuoles	3.Have many small vacuoles.
4.No Centrioles	4.Have Centrioles
5.Have plastid	5.No plastid
6.can produce their own food.	6.can not produce their own food.
7.Generally comered shaped	7.oval shaped.

2.write the Levels of organization in order and give an example for each.

Cell ⟶ tissue ⟶ organ ⟶ organ system ⟶ organism

Smooth muscle Cell | Smooth muscle Tissue | Stomach | Digestive system | Human

3.Numerate the membrane as organelles of Eukaryotic cells?

a. mitochondria

b. endoplasmic Reticulum

c. Golgi bodies

d. plastids

e. centrioles

f. Lysosome

g. vacuoles

4.write the functions of cell membrane.

Ans:

a. cell membrane forms the outside boundary that separates the cell from its environment.

b. cell membrane has tiny pores that let substances in to and out of the cell. Example: food , water, oxygen can enter the cell and harmful and waste products can leave.

c. cell membrane gives regular shape to the cell.

d. cell membrane protects the cell from external effects.

5.write differences between eukaryotic cell and prokaryotic cell.

Prokaryotic cell	Eukaryotic cell
1.have no true nucleus 2.hereditary material is free in the cytoplasm 3.they don't have organelles only have ribosome. 4.example Bacteria.	1.Have true nucleus 2.Hereditary material(DNA) inside nucleus. 3.Have many organelles such as mitochondria, ribosome, lysosome, Golgi bodies. 4.example paramecium.

C-True or False

1.paramecium is an eukaryotic unicellular organism. ***T***

2.All organisms consist of number of cells. ***F***

3.Ribosome produce energy for cell. ***F***

4. Heart is an example for organism. ***F***

5.plant cells can produce their own food. ***T***

D-fill in the blank correctly

1.Agroup of organ working to get her to perform a particular function is called as an ***organ system***.

2.the ***Cell*** is the smallest functional unit of life.

3.***Golgi bodies*** receive protein, package and distribute them to the other parts of cell.

4.cytoplasm = ***cytosol*** + ***organelles***

5.Multicellular organism consist of ***number of cells*** .

E- multiple choice:

1.which one of the following organelles is more active during exercises?

A. lysosome

B. Ribosome

C. Mitochondria

D. Nucleus.

Ans: C

2.in which of the followings organelle and its function paired correctly?

A. Ribosome ⟶ carries protein and others.

B. vacuole ⟶ produce protein.

C. Endoplasmic reticulum ⟶ Release materials to the outside.

D. centrioles ⟶ help cells to divide.

Ans: D

3. ---------- are come together and forms are made up of these small unit of life.

A. Tissues

B. Blocks

C. cells

D. Microorganism

Ans: C



4.which one of the organelles is found only in plant cell?

1.plastids

2.cell membrane

3.centrioles

4.Vacuole

Ans: A

QUESTIONS ENRICHMENT

ONE- choose the best Answer

A. which one of the followings is common both for plant and animal cell?
1-Having cell wall.
2.Having small vacuole.
3.Having nucleus
4.Having plastids

Ans: 3

B. which one of the followings contains all others?
1.cell
2.Tisue
3.system
4/organism

Ans: 4

C. which one of the following statements is Not true?
1.plants have prokaryotic cell.
2.cell membrane lets substances in to and out of cell.
3.Eukaryotic cells have true nucleus.
4.Eukaryotic cells have three main parts.

Ans: 1

D. which one of the following organisms is prokaryotic?
1.Human body
2.Bacteria
3.Robbit
4.Datepalm tree.

Ans: 3

E. which one of the following is not true for nucleus?
1. it is control center of cell.
2. it contains DNA
3.cells are generally have 2 or 3 nuclei.
4.some mature cells have no nucleus.

Ans: 3

Q/ what is the difference between cell membrane and cell wall?
Ans:

Cell membrane	Cell wall
1.it is found in all organism Like plant and animal 2.layer Living material 3.Have tiny pores that let substance in to and out of the cell Ex-oxygen, water, food. and waste. 4.gives regular shape to the cell.	1.it is found only in plant. 2.Layer non Living material. 3.Have big pores and let passage of big molecules such as starch and protein. 4.gives strength and supports the plant cell.



Q/Fill in the blanks
1-Eukargotic cell types include both single celled or ***unicellular*** organisms Like paramecium and amoeba, and multicellular organisms Like human ***animals*** and ***plants***.
2.size of organisms depend on ***number of cells*** , the cells of ant and elephant are almost the same size But elephant is Larger than Ant due to the number of cells.
3.Both prokaryotic and eukaryotic cells have ***ribosomes*** they are smallest organelle of cell and it is ***non-membranous*** organelles .
4.there are three types of plastids they are ***chromoplasts*** , ***Leucoplasts*** and ***chloroplast***.
5.Anything that can perform Life activities itself is an ***organism.***

Q/ match the following structures with their function and properties.

1.cell mew bran	a. An organelle that contains green pigments chlorophyll.
2.cytoplasm	b. Does intracellular
3.Mitochondria	c. non Living parts of plant cell.
4.ribosome	d. helps cell division
5.Lysosome	e. package and modifies produced materials.
6.vacuole	f. supplies energy for a cell
7.chloroplast	g. the smallest and non-membranous organelles
8.cell wall	h. store food or wastes
9.centrosome	i. control material exchange in to and out of cell.
10.Golgi body	j .it is composed of cy to sol and organelles.

Ans:
1.i 2. j 3. f 4. g 5.b 6. h 7.a 8. c 9.d 10.e

Q/ use the following terms in the same sentence.
1.**organ – system**
A group of organs working together to perform a particular function is called an organ system , example digestive system.
2.**cell – cytoplasm – cell membrane – nucleus**
all types of Eukaryotic cells have these structures
a. cell membrane b. cytoplasm c. Nucleus.

Q/ Correct the mistake if present.
1.All types of cells have similar structure and function.
Ans: All types of Eukaryotic cells have similar structure and function
2.cell wall is non-Living rigid Layer.
Ans: cell wall is a rigid Layer of nonliving material.
3.paramecium and amoeba are prokaryotic in cell structure.
Ans: paramecium and amoeba are Eukaryotic in cell structure.
4.cells come to get her to form an organ.
Ans: cells come together to form an tissue.

DICTIONARY CHAPTER (5)

Cellخلية	Organelles العضيات
Composed تتألف	Genetic material DNA المادة النووية
Invented اختراع	Direct metabolic activity تدير الفعاليات الايضية
Levels مستويات	Provides genetic continuity استمرارية صنع المادة الوراثية لديمومتها
Tissue نسيج	Prokaryotic cell خلايا بدائية النواة
Organ عضو	No true nucleus غير حقيقية النواة
Organ system جهاز	Hereditary material المادة الوراثية
Organism كائن حي	Membranous organelles تعني العضيات لا تحتوي على غشاء خلوي يحيط بها
Non-Living things اشياء غير حية	Eukaryotic cells خلايا حقيقية النواة
Carry out تنفيذ	Unicellular احادية الخلية
The cell theory النظرية الخلوية	Multicellular متعددة الخلايا
Proposed مقترح	Cell wall الجدار الخلوي
Structure تركيب	rigid Layer طبقة صلبة
Cell membrane الغشاء الخلوي	Distinctive features ملامح مميزة
Protect يحمي	Protect حماية
Limits يحدد	Support دعامة
Cytoplasm السايتوبلازم	Strength قوة
Metabolic activities النشاطات الايظية	Big pores ثقوب كبيرة
Fungi فطريات	Passage تمر او يمكن عبورها
Mitochondria مايتوكوندريا بيوت الطاقة	Big molecular جزيئات كبيرة
Endoplasmic reticulum الشبكة الاندوبلازمية	Starch نشا
Ribosome الرايبوسومات	Protein بروتين
Golgi bodies اجسام كولجي	Organelles عضيات
Vacuole الفجوات	Embedded موجودة ومترسخة بقوة
Lysosome الاجسام الحالة	Cytosol الجل السائل

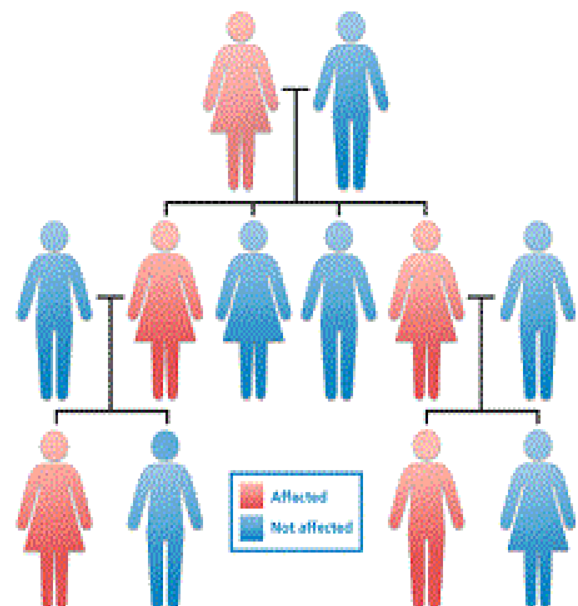
Chloroplast البلاستيدات الملونة	Centrioles الجسم المركزي
Centrioles الجسم المركزي	Help to divide تساعد في انقسام الخلية
Due to بسبب	Lysosome الجسم الحال
Lack تفقد(ليس لها)	Digestion هضم
Outside boundary الحد الخارجي	Foreign substances الاجسام الغريبة
Tiny pores ثـقوب صغيرة (رقيقة)	Vesicles الحويصلات
Regular shape شكل منتظم ومتناسق	Nucleus النواة
Literally (صغيرة جدا دقيقة)	Spherical دائرية
(Tiny structure) تراكيب دقيقة	Oval بيضوية
Consist تتألف	Control center مركز السيطرة
Tubules انابيب طويلة	Hidden مخبأة
Mail room غرفة البريد	Instance نموذج
Package علبة كاملة	Nuclei أنوية (جمع نواة)
Distribute توزعه	Adapted ملائمة
Release تحرر	Stomach معدة
Special خاصة	Arrangement مرتبة
Produce تنتج	Summarize يتلخص
Store تخزن	Atoms ذرات
Chromoplasts بلاستيدات صبغية (الملونة)	Molecules جزيئات
Leucoplasts بلاستيدات عديمة اللون	Life processes الفعاليات الحياتية
Chloroplast البلاستيدات الخضراء	Intestines الامعاء
Food stuff المواد الغذائية	Break down طحن
Closely associated ارتباط مغلق	Small particles جزيئات صغيرة
	Depends يعتمد

CHAPTER SIX



WHAT IS

- GENETIC ENGINEERING
- CELL DIVISION
- DNA
- CHROMOSOMES
- A GENE



CHAPTER (6)

GENETICS

Do you look more like your father or grandfather? Do you have your father's eye? May be brown eyes, blue, green or gray? May be black, brown, blond or red hair?
These are examples of the traits that are inherited from parents and all these equations are answered by ***GENETICS***.

*Q/*what is genetics (Define genetics)?
Genetics: It is branch of biology that deals with study of heredity (gene).

Define gene: It is a segment of DNA that codes a particular trait and it is a basic unit of hereditary which is located on chromosomes.

*Q/*what is the function of gene?
Ans: They control an organism's body form and function and it is the principle account for transmission of traits from parents to offspring.

*Q/*where are genes located and what they have?
Ans: Genes are located on chromosomes and they have different forms of a trait are called ***alleles*.**

Define allele: It is form of a trait that a gene may have, some alleles can be *dominant* and others can be *recessive*.

Q/ what are the types of allele?
Ans: the types of allele are
1. Dominant allele.
2. Recessive allele.

Note

If you get a dominant gene from either of your parents you will look more like the one from whom you received that gene.

Q/ why do you resemble some people but do not look like others at all?
Ans: because some of our genetics give similar characteristics to other people, but other genetics in our cells are different to ones in other humans.

The molecular basis of inheritance

Q/ what does the cell use for its information? Where is stored?
Ans: the cell uses a code that is stored in its *hereditary material*.

Define cell code: It is a chemical called *deoxyribonucleic acid* or *DNA*. It contains information for an organism's growth and function.

Q/ where is DNA stored?
Ans: DNA is stored in cells that have a nucleus.

Q/ what happens to the DNA when the cell divides?
Ans: when the cell divides, the DNA code is copied and passed to the new cells.

Q/ which coded information does the new cell receive in the cell division?
Ans: in the cell division, the new cell receives the same coded information that was in the original cell.



Important note: Every cell has ever been formed in your body or in any other organisms contains DNA. (*TRUE - FALSE*)

Q/ what do most of our characteristics (such as the color of our hair) depend on?
Ans: most of our characteristics (such as the color of our hair) depend on the kind of proteins our cells make.

Q/ what does DNA in our cells store? Why?
Ans: DNA in our cells stores the instructions for making the proteins our cells make.

Q/ how is DNA in each body cell and why?
Ans: DNA in each body cell is identical because each cell comes from another cell by means of cell division.
Q/ what do new cells receive by cell division?
Ans: by cell division, new cells receive the same coded information that was in the original cell.

Cell division

There are two kinds of cell division according to type of cell:

1. Mitosis division
2. Meiosis division

1- Mitosis

Define Mitosis: It is a kind of cell division in which a parent cell divides into two daughter cells.

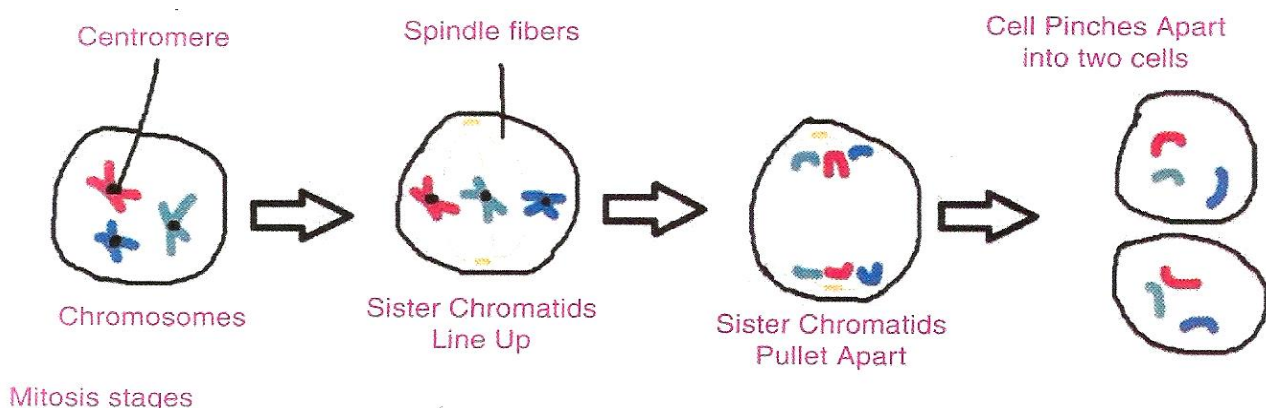
Note: In Mitosis parent and daughter cells have the identical genetic form or make up.

Q/ what does Mitosis enable in multicellular organisms?
Ans: In multicellular organisms Mitosis enables:
1. Growth 2. Development 3. Repair of damaged organs

Q/ what does Mitosis enable in unicellular organisms?
Ans: In unicellular organisms Mitosis enables a kind of asexual reproduction.

يمكن ان يأتي هذان السؤالان كسؤال لبيان الفرق في عملية الانقسام الاعتيادي (Mitosis) بين الكائنات المتعددة الخلايا multicellular والكائنات احادية الخلية unicellular

Q/ draw Mitosis stages.



2- Meiosis

Define Meiosis: It is a kind of cell division that reduces the chromosome number by half and produces gametes.

Q/ what is gametes called and what are they?

Ans: Gametes is called reproduction cell and they are sperm and eggs.

Q/ what does Meiosis provide in offspring?

Ans: Meiosis provides great variety and diversity in offspring.

Note: Species have different number of chromosomes.

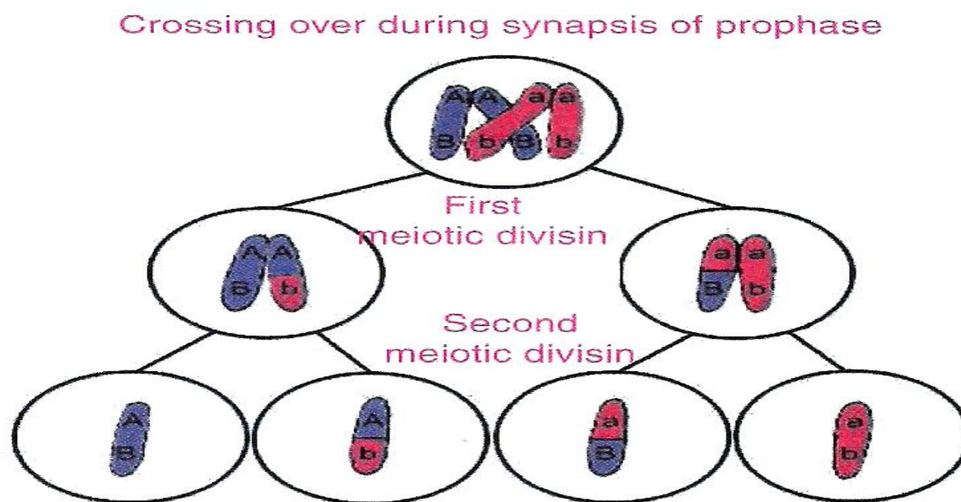
1. Humans have ⟶ 46 chromosomes
2. Mice have ⟶ 40chromosomes
3. Cows have ⟶ 60chromosomes
4. Sugarcane has ⟶ 80 chromosomes
5. Doges have ⟶ 78chromosomes

Note: The number of chromosomes is not what makes each organism

Q/ what makes each organism unique?

Ans:The information specified by the genes in the chromosomes makes each organism unique.

Q/ draw Meiosis stages.



What is genetic engineering?

Define genetic engineering: It is the process of manually adding new DNA to an organism.

Q/ what is the goal of genetic engineering?

Ans: The goal is to add one or more new traits that are not already found in the organism.

Q/ give examples of genetically engineered (transgenic).

1. The market which include plants with resistance to some insects.
2. Plants that can tolerate herbicides.
3. Crops with modified oil content.

SELF CHECK GENETICS

B. Review Questions



1- What is the material which transmits traits from parents to offspring?

Ans: Gene is the material which transmits traits from parents to offspring.

2- What is the function of DNA?

Ans: DNA controls an organism's body forms and functions.

3- Do you like your father or mother? Why?

Ans: I have semi trait my mother because I have dominant gene from my mother.

4- Write the importance of mitosis for multicellular organisms.

Ans: In multicellular organisms, mitosis enables:

1. Growth 2. Development 3. Repair of damaged organs

5- Write the importance of meiosis.

Ans: Meiosis produces gametes, so meiosis provides great variety and diversity in offspring.

C. True or False

1- In mitosis parent cell and daughter cell have identical genetically make up. ***T***

2- Eggs are formed by meiosis. ***T***

3- Unicellular organisms reproduce by meiosis. ***F***

4- Genetics is study of cell. ***F***

5- We inherit eye color from our parents. ***T***

D. Multiple choices

1- How many cells formed at the end of mitosis?

A. 2

B. 3

C. 4

D. 5

Ans: **A**

2- Genes located on --------------.

A. Cell

B. Meiosis

C. Cell membrane

D. Chromosome

Ans: **D**

3- Which of the following is true for meiosis?

A. 2 cells are formed.

B. Identical cells formed.

C. 4 Identical cells are formed.

D. 4 different cells are formed.

Ans: **D**

4- Which of the followings not inherit from parents?

A. Height

B. Hair color

C. Strong muscle

D. Eye color

Ans: **C**

Questions Enrichment

A-Choose the best answer.

1- --------------- is the study of heredity or genes.
a. Cytology
b. Ecology
c. Genetics
d. Zoology

***Ans:* C**

2- Which one of the following is not true for DNA?
a. It is stored in nucleus.
b. It contains information for an organism growth.
c. DNA is identical in each body cell of organisms.
d. All organisms have similar DNA.

***Ans:* D**

3- In --------------- 2 cells formed, while 4 cells formed in --------------.
a. meiosis – genetics
b. mitosis – meiosis
c. mitosis – division
d. meiosis – mitosis

***Ans:* B**

4- Which one of the following is not true for Mitosis?
a. Parent cell divide into two daughter cells.
b. Parent cell and daughter cells have identical DNA.
c. Reproductive cells formed by Mitosis.
d. Mitosis enables growth for organisms.

***Ans:* C**

5- Which one of the following is inherited from parents?
a. Eye color
b. Flu disease
c. Strong muscle
d. Good behaviors

***Ans:* A**

B- Fill in the blanks

1- There are two types of cell division, they are **Mitosis** and **Meiosis.**

2- A **gene** is a part of **DNA** that codes particular trait (character).

3- **Genetics** is study on how genetically characters pass from parents to offspring.

4- **DNA** in each body cell is identical because each body cell comes from another cell by Mitosis.

C-For each of terms, write how their meanings are different.

1. *Gene – Genetics*

Gene: it is a segment of DNA that codes a particular trait.
Genetics: it is study of genes.

2. *Mitosis – Meiosis*

Mitosis: produces two daughter cells with identical chromosomes for each.
Meiosis: reduces the chromosome number by half and produces gametes (reproductive cells).



D- Correct the mistake if present.

1. The aim of genetic engineering is to add new features to organism.***(Mistake)***
Correct: The aim of genetic engineering is to add new DNA to organism.

2. Egg cells are formed by mitosis. ***(Mistake)***
Correct: Egg cells are formed by meiosis.

3. Genes are located (a part of) on chromosomes. ***Correct***

E- Write 5 visible genetic characteristics.

1. Height
2. Hair color
3. Eye color
4. Ear lobe
5. Dimples

F- Critical thinking.

Q/ A family, father and mother have *not connected eyebrows*. But their son has *connected eyebrows*. How this event can be explained genetically?

Ans:The parents have *not connected eyebrows recessive gene*, it is not appears on them but it appears on their son and might on the next offspring.

This is the meaning of recessive gene, not appears on the one who hold it, but might it appears on his children or the next offspring.

DICTIONARY
(CHAPTER 6)

Traits صفات / سمات	Inherited الموروثة
Principle المسؤول	Transmission عملية النقل
Parents الاباء	Offspring الابناء / الذرية
Allele (أليل) وهو موقع كروموسوم (يتكون من عدة جينات) أو شكل من اشكال الجينات	The molecular basic of inheritance التركيبة الاساسية للموروثات
Recessive متنحي	Resemble تشابه
Domain سائد أو مسيطر	Code شفرة
Stored مخزونة	Receive تستقبل
Copied تستنسخ	Passed عبورها
Identical مماثل / مطابق او متجانس	Mitosis الانقسام الخيطي الاعتيادي
Spindle fibers خيوط المغزل	Line up انتضامها في صف واحد
Pullet Apart انسحاب الكروماتيد الى الاقطاب	Cell pinches تخصر الخلية وانقسامها الى قسمين
Meiosis الانقسام الاختزالي او النصفي	Gametes خلايا تكاثرية
Sperms نطف	Eggs بيوض
Provides تجهز او تزود	Great variety تنوع كبير ورائع
Diversity مختلف	Trans genetic نقل الموروثات او الجينات
Currently حاليا	Resistance مقاومة
Insects حشرات	Tolerate تتحمل
Herbicides مبيدات الحشرات	Craps المحاصيل
Modified خبط وتعديل	Oil content المحتوى الزيتي
Synapses التشابك	Prophase الطور الاول
Ear lope شحمة الاذن	Dimples الغمازات

CHAPTER (7)

Necessities of life

The incredible human machine

Q/ why the human body machine is the most machine in the world?
Ans: because it performs amazing feats of engineering, chemistry and physics.

There is a perfect division of labor among body parts. Each part of the body has a specific function like hear, breathe, walk, run and sense pleasure.
Our bones, muscles, arteries, veins and internal organs are organized according to a marvelous design.

- We are built of our own structural units (cells).
- Cells are very tiny approximately one-thousandth of a millimeter.
- The cells are the structural units that form our body and everything in it, such as liver, eye and skin.

Note (1)
The cells are able to form differ organs and these organs ought to differ on from another as well and is also true. These organs in turn form different systems.

Note (2)
There are multiple functions for a human to perform. Human organisms have many complex systems.

Q/ List the human body system.

Ans:

1. Digestive system
2. Circulatory system
3. Respiratory system
4. Immune system
5. Lymphatic system
6. Urinary system
7. Integumentary system
8. Skeletal system
9. Muscular system
10. Nervous system
11. Endocrine system
12. Reproductive system

Notes about your life

1- Your heart beats 3 billion times.

2- Your heart pumps about 300 million liters of blood.

3- You blink your eyes 415 million times.

4- You produce 40 thousand liters of urine.

5- You produce 145 liters of saliva.

6- You produce 950 kilometers of hair.

7- You produce 28 meters of finger nails.

8- You produce 2 meters of nose hair.

9- 19 Kg. of dead skin cells.

10- You walk about 22000 kilometers.

Why do you eat?

Q/ Why do we need food?
Ans: We need food to carry out daily activities and all the energy and nutrients we need is stored in the food.

Q/ What we need to carry out daily activities? ← *يمكن ان يأتي السؤال بهذه الصيغة*
Ans: We need food because the energy and nutrients we need is stored in the food.

Q/ How many kinds of nutrients in food?
Ans: There are six kinds of nutrients in food.

Q/ List the kinds of nutrients of food?
Ans: 1.proteins 2.carbohydrates 3.fats 4.vitamins 5.minerals 6.water

Q/ What are the kinds of nutrients used as energy sources?
Ans: Proteins, carbohydrates and fats are used as energy sources.

Q/ What kinds of nutrients do not provide energy? Why we need them?
Ans: Water, minerals and vitamins do not provide energy. We need them for the regulation of normal body functions.

من الممكن ان يأتي هذان السؤالين بصيغة الفرق بين نوعي العناصر الغذائية وكالاتي :
What is the different between(prot.,carb.,...) and (water,minera.....)
والجواب هنا هو جوابي السؤالين اعلاه.

Q/ what we eat?
Ans: we eat food

Q/ what does the food supply to our body?
Ans: It supplies
1- Materials for the production of new cells which become part of our body.
2- Energy which allows us to do the things we want to do.

Bioenergetics

Q/ why all living things require energy?

Ans: because life processes involve work.

Define energy: it is the capacity to do work.

Q/ why all cells need energy?

Ans: All cells need energy to *grow*, *reproduce* and *survive*.

Q/ what is the main source of energy?

Ans: Sun is the main source of energy.

Q/ why do almost all organisms depend on sun?

Ans: Because in photosynthesis, plants and other photosynthetic organisms capture solar energy and convert it to chemical energy.

Metabolism

Define metabolism: it is the sum of biochemical reaction in the cell and all life activities in the cell.

Q/ what are the types of metabolism?

Ans: Metabolism can be divided into two types:

1. Anabolism
2. Catabolism

Q/ Compare between anabolism and catabolism.

Ans:

1. Anabolism: it is biosynthesis reactions such as photosynthesis (big molecules are made from simple ones).

هذا الجواب هو ايضا تعريف (anabolism)

2. Catabolism: it is the breaking down reaction such as cellular respiration (big molecules are broken down into simple once).

هذا الجواب هو ايضا تعريف (catabolism)

Notes: In average life span, we use nearly

1. two tons of oxygen gas.
2. (6-10) tons of water.
3. two tons of food.
4. seven million kilocalories.

Carbohydrates

Define carbohydrates: it is food molecules made up of sugar.

Q/ how do cells use carbohydrates?
Ans: Cells use carbohydrates as a:
1- Source of energy.
2- Use for energy storage.

Q/ why do organisms break down carbohydrates?
Ans: Organisms break down carbohydrates to release the energy stored in them

Q/ what are the kinds of carbohydrates?
Ans: There are two kinds of carbohydrates:
1- Simple carbohydrates.
2- Complex carbohydrates.
Define simple carbohydrates: are made up one sugar molecular or few molecular linked together.
EX: 1- table sugar 2- the sugar in fruits

Define complex carbohydrates: are made up hundreds of sugar molecular linked together. That sugar in this type is the extra sugar.
EX: 1- in plant as potato store extra sugar as starch 2- starch in corn plants

Q/ what does our body do when we eating potato?
Ans: when we eating potato this means we eating a potato stored starch then our body breaks down this complex carbohydrates to release the energy stored in the potato.

Lipids

Define lipids: they are compounds that cannot mix with water.
Q/ what are the important jobs of lipids?
Ans: lipids have many important jobs in the cell such as:
1- Some lipids ***store*** energy (like carbohydrates).
2- Some lipids ***form*** the membranes of cells.

Fats and oils

Define: they are lipids that store energy and the organism can get energy from these lipids when it has used up most of its carbohydrates.

Q/ what are the differences between fats and oils?
Ans: (the structure of fats and oils are almost the same). ⟵ ***(TRUE OR FALSE)***

Fats	Oils
1. At room temperature are solid.	1. At room temperature are liquid.
2. They are lipids stored in animals.	2. They are lipids stored in plants.
3. Ex. Butter.	3. Ex. Olive oil, corn oil.

Vitamins

Define vitamins: they are essential to cellular metabolism, many are protective against illnesses.

Q/ how much are vitamins required in the human diet as compare with others?
Ans: Vitamins are required in the human diet in quantities that are quite small compared with the relatively large quantities of *essential amino acids* and *fatty acids*.

Q/ List the functions of vitamins in maintaining human health.
Ans:
1. Promotion of body growth.
2. Help in maintaining overall health.
3. Promotion of the normal functioning of the nervous and digestive system.
4. Promotion of body immunity against disease.

Q/ what is the effect of vitamins deficiency in human body?
Ans: In the deficiency or absence of vitamin in the body, dependent reaction slow or cease resulting in health disorders.
Ex. Vitamins A, B, B2, K, C, D, E

VITAMINS	SOURCES	EFFECTS OF DEFICIENCY
A (Retinol)	Milk, Butter, Carrots and Fresh vegetables	Night blindness Dry scelling
B_1 (Thiamine)	Legumens, Peanuts and Liver	Beriberi-Never disorders
B_2 (Folacin)	Liver, Legumens, Orange and Green vegetables	Anaemia and Birth defects
C (Ascorbic acid)	Fruit, Vegetables, Cabbage and Tomatoes	Scurvy-Teeth, Skin and Blood vessels disorders
D (Calcipherol)	Fish oil, Milk and Egg yolk	Rickets Bone disorders
E (Tocopherol)	Vegetables oils, Nuts and Seeds	Never damage Reduced fertility
K(Phylloqulnone)	Green vegetables, Tea and Made by intestinal bacteria	Slow blood clotting

SELF CHECK
CHPTER (7)

B. Review Question

1. Write the six kinds of nutrients in food.

Ans: 1- Proteins 2- Carbohydrates 3- Fats
4- Vitamins 5- Minerals 6- Water

2. What are the differences between anabolism and catabolism?

Ans:

Anabolism: it is biosynthesis reactions such as photosynthesis (big molecules are made from simple ones).

Catabolism: it is the breaking down reaction such as cellular respiration (big molecules are broken down into simple once).

3. Give 2 examples for both simple and complex Carbohydrates.

Ans:

- Simple Carbohydrates ⟶ 1- table sugar 2- the sugar in fruits
- Complex Carbohydrates ⟶ 1- potato's sugar(starch) 2- corn's starch

4. Write the differences between fats and oils.

Ans:

Fats	Oils
1. At room temperature are solid.	1. At room temperature are liquid.
2. They are lipids stored in animals.	2. They are lipids stored in plants.
3. Ex. Butter.	3. Ex. Olive oil, corn oil.

5. Write the functions of vitamins.

Ans:

1. Promotion of body growth.
2. Help in maintaining overall health.
3. Promotion of the normal functioning of the nervous and digestive system.
4. Promotion of body immunity against disease.

C. True or False

1. Deficiency of vitamin A causes the anaemia. ***F***
2. Vitamin K helps blood clotting. ***T***
3. Lipids can mix with water. ***F***
4. Carbohydrates are source of energy. ***T***
5. Some lipids form the membrane of cell. ***T***

D. Fill in the blanks correctly

1- Water, mineral and vitamins do not provide energy.
2- Metabolism divided into two types they are anabolism and catabolism.
3- The extra sugar in potato is stored as starch.
4- All life activities in the cell are called metabolism.
5- Deficiency of vitamin D causes the rickets.

E. Multiple choices

1. Which of the followings not source of energy?
a- Proteins
b- Fats
c- Carbohydrates
d- Vitamin A

***Ans:* d**

2. Which of the following matches is false for vitamin and disease in its deficiency?
a- Vitamin D - Rickets
b- Vitamin A - Night blindness
c- Vitamin C - Scurvy
d- Vitamin B9 - Slow blood clotting

***Ans:* d**

3. Which of the following is not a function of vitamins?
a- Promotion of body growth.
b- Help in maintaining overall health.
c- Producing energy for body activities.

***Ans:* c**

d- Promotion of body immunity against disease.

4. Which one of the followings does not mix with water?

a- Olive oil

b- Simple carbohydrates

c- Complex carbohydrates

d- Table sugar

***Ans:* a**

Questions Enrichment

A. Choose the best answer.

1. Why we need to eat food regularly?

a- To taste different food types.

b- To have strong muscles.

c- To provide daily body activities.

d- To be familiar with materials in food.

***Ans:* c**

2. Which one of the following statements is true?

a- Metabolism is sum of all reaction in cell

b- Anabolism is breaking down of molecules.

c- Catabolism is building of bigger molecules.

d- Photosynthesis is an example for catabolism.

***Ans:* a**

3. Which one of the followings is true for carbohydrates?
a- There are three main types of carbohydrates.
b- Simple sugars consist of one sugar molecule.
c- They are all insoluble in water.
d- They are not source of energy.

***Ans:* b**

4. Which one of the followings is not true for lipids?
a- They don't mix with water.
b- They store energy.
c- Lipids support the immunity.
d- They form the cell membrane.

***Ans:* c**

5. Which one of the followings is not true for vitamins?
a- They promote body growth.
b- They help in maintaining overall health.
c- They are essential to cellular metabolism.
d- They are primary source of energy.

***Ans:* d**

B. Fill in the blanks correctly

1. *Nutrients* are source of energy, but *vitamins* are not used to provide energy.
2. Children suffer rickets in deficiency of vitamin D.
3. *Fats* and *oils* are lipids that store energy.
4. We are built from structural units called as *cell*.

C. What diseases are caused by these vitamin deficiencies?

Vitamin		Diseases
1. Vitamin **A**	→	Night blindness
2. Vitamin **B1**	→	Nerve disorders
3. Vitamin **B2**	→	Anaemia
4. Vitamin **C**	→	Scurvy
5. Vitamin **D**	→	Rickets
6. Vitamin **E**	→	Reduced fertility
7. Vitamin **K**	→	Slow blood clotting

DICTIONARY
(CHAPTER 7)

Necessities الضروريات	Bones العظام
Muscles العضلات	Arteries الشرايين
Veins الاوردة	Internal organs الاعضاء الداخلية
Organized منظمة	Marvelous design تصميم مدهش
Detail بالتفصيل	Amazing facts حقائق مذهلة
Approximately تقريبا	Specialization اختصاص او تخصيص
Careful بحذر	Attention انتباه
Digestive system الجهاز الهظمي	Circulatory system جهاز الدوران
Respiratory system الجهاز التنفسي	Immune system الجهاز المناعي
Lymphatic system الجهاز اللمفاوي	Urinary system الجهاز البولي
Integumentary system الجهاز الجلدي	Skeletal system الجهاز الهيكلي
Muscular system الجهاز العضلي	Nervous system الجهاز العصبي
Endocrine system جهاز الافراز/الغدد الصماء	Reproductive system الجهاز التكاثري
Beats نبضة	Pumps يضخ
Blink يرمش	Urine يوريا
Saliva اللعاب	Hair الشعر
Nail الاظافر	Energy sources مصادر الطاقة
Supplies يجهز / يزود	Bioenergetics الطاقة الحيوية
Involve يتضمن	Capture تحبس
Solar energy الطاقة الحرارية	Convert it تتحول
Chemical energy الطاقة الكيميائية	Metabolism الايض الغذائي
Biochemical البايوكيميائية	Sum مجموع
Reactions التفاعلات	Anabolism بناء مواد حية من مواد صغيرة
Catabolism تكسيرمواد كبيرة لمواد صغيرة	Biosynthesis التحليل الحيوي
Anabolic البناء الايضي	Cellular respiration التنفس الخلوي
Linked together ترتبط معا	Starch النشا
Corn ذرة	Release يتحرر
Lipids الدهون (الصلبة + السائلة)	Fats الدهون الصلبة
Oils الدهون السائلة	Essential ضروري / اساسي
Deficiency المشاكل الصحية	

CHAPTER (8)

ECOLOGY علم البيئة

Origin of earth

- Earth is the only planet we know of that can support life.
- Earth is *made out* of the *same matter*, was *formed* at the *same time* and *formed* through the *same processes* as other planets in our solar system.

Q/ what is the source of energy to the earth?
Ans: The sun is the source of energy to the earth.

Q/ when did earth begin to form?
Ans: Earth began to form over 4.6 billion years ago.

Q/ what formed the earth?
Ans: The earth formed from the same cloud of gas that formed our sun and rest of the solar system and other galaxy.

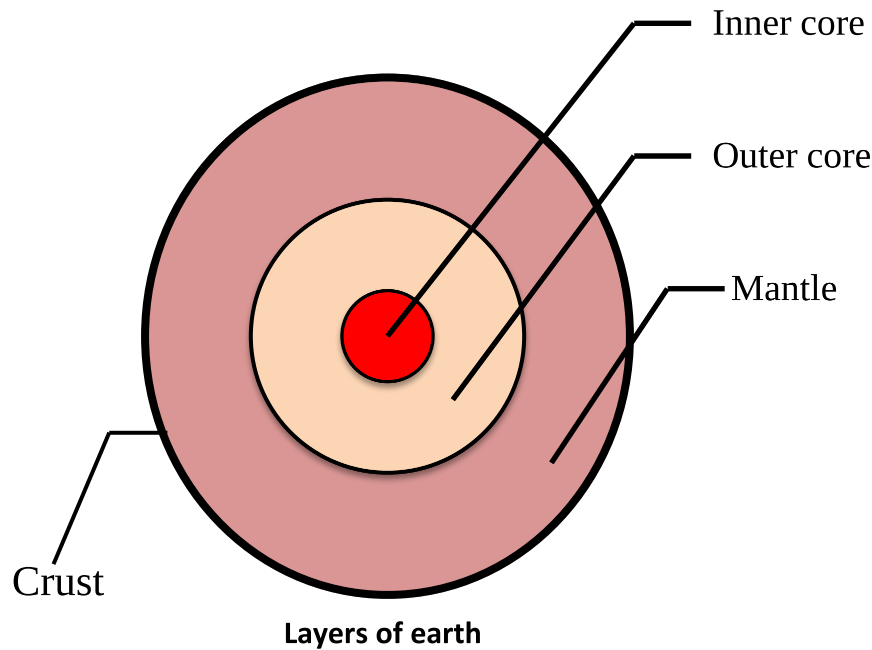
Note

By 3.8 to 4.1 billion years ago, earth had become a planet with an atmosphere and an ocean.

Composition of the earth

- Many seen like the earth is made up of one big solid rock, but it's really made up of a number of parts.
- Earth is made up of a number of layers and these layers get more dense the closer to the center of the earth you get.

Q/ List the main layers of the earth.
OR (Write the four main layers of earth.)
Ans: 1- Crust 2- Mantle
3- Outer core 4- Inner core



Layers of earth

1- **Crust:** It is the thin outer layer of the earth where we live, it is thin relative to the other layers.

Q/ How does the crust vary in its thickness?
Ans: The crust varies in its thickness from around 5km thick (in ocean floor) to around 70km thick (on land).

2- **Mantle:** The second (next the crust) layer of the earth, it is thicker than the crust at almost 3000km deep.

- **Tectonic plates:** Are a combination of the crust and the outer mantle, it is called the *Lithosphere*.

Q/ what are the characteristics of the tectonic plates?
Ans:
1. Combination of the crust and mantle.
2. Its plates move very slowly, around a couple of inches a year .
3. When the plates move and the boundaries bump up against each other it can cause an earthquake.

Q/ what can the movement of tectonic plates cause?
Ans: It can cause an earthquake.

3- **Outer core:** It is an earth layer which is made up of iron and nickel and it is very hot **(4400 to 5000 C^{o})** so that iron and nickel metals are liquids.

Q/ what are the characteristics of the outer core of earth?

Ans:

1. It is made up of iron and nickel.
2. It is very hot (4400 to 5000 C^o).
3. Its iron and nickel metals are liquids.

4- **Inner core:** It is the hottest part of the earth (at over 5000 C^o) is about as hot as the surface of the sun.

Origin of life

Q/ what are the first living organisms on earth?

Ans: The first living organisms on earth are protists that lived in oceans.

Q/ how can protist produce their own food?

Ans: They can produce their food by photosynthesis.

Q/ what was created after protists?

Ans: After protists new forms of life were created like simple plants (ferns).

Q/ what was created after ferns?

Ans: After ferns animals like dinosaurs and big birds were created which lived and became extinct today.

What is a fossil

Fossil: It is the preserved remains or impressions of living organisms such as plants, animals and insects. It is very old.

Q/ what does studying fossils help?

Ans: Studying fossils helps scientists to learn about the past history of life on earth.

Biosphere

Biosphere: The part of earth and its atmosphere in which living organisms exist or that is capable of supporting life.

Note

The height of biosphere in atmosphere reaches the **10000 m** and higher than this altitude living organisms not found.

Q/ what does the level of biosphere for terrestrial animals and plants reach?
Ans: The level of biosphere for terrestrial animals reaches about (6500-6800)m and for plants about 6200m .

Q/ which deep of ocean in biosphere that life observed?
Ans: Biosphere reaches 5000m in deep of ocean where some form of life observed.

Q/ what does biosphere contain for living?
Ans: Biosphere contains air, water, soil and rocks which are suitable conditions for living.

Q/ why the biosphere is suitable for living?
Ans: Biosphere is suitable for living because it contains air, water, soil and rocks.

Elements of Ecology

Ecology: It is the relationship of living things to each other and to what around them.



Q/ what are the kinds of relationships in ecology?
Ans:There are two types
1. Biotic factors.
2. Abiotic factors.

1. Biotic factors

Biotic factors: They are living things that effect on life of organism, on its environment and these factors can be unicellular organisms, plants or animals.

Q/ numerate or list of biotic factors.
Ans: 1- parasitism 2- symbiosis 3- predation

1. ***Parasitism:*** It is a kind of biotic factors means organisms which feed on or in another organism which called as host.

Note

Hosts are harmed by parasites; these parasites can be virus, bacteria, fungi or some animals.

2. ***Symbiosis:*** It is a kind of biotic factors in which living of two organisms together in different forms; one of them commensalism. This means a form of relationship between two organisms where one organism benefits without affecting the other.

3. ***Predation:*** It is kind of biotic factors where a predator (the animal that is hunting) feeds on its prey (the animal that is attacked).

Note: Predators may or may not kill their prey prior to feeding them but the act of predation often results in the death of its prey.

2. Abiotic factors

Abiotic factor: It is non- living thing like temperature, water, soil, minerals, light, air and oxygen that are necessary for living things.

Q /Numerate the abiotic factors.
Ans: 1- temperature 2- water 3- soil 4- light

1. **Temperature:** It is abiotic factor and the difference in temperature effects on type of organisms in an ecosystem.
Ex. Pole bears live in cold climate.
- Desert camels live in hot climate.
- A hot climate tree (date palm) cannot grow in Russia.

2. **Water:** It is an important abiotic factor for organisms.

Q/ Why do some animals live nearby river, lake or any water resource?
Ans: Because water is an essential factor for these animals.

Q/ Where do amphibians live?
Ans: Amphibians live in lakes or damp areas also.
Aquatic plant: It is a hydrophate plant (like water Lily) which has features adapted to its environment, wide leaves and the placement of stomata on the upper surface of leaves ease the process of evaporation.

3. **Soil**
Q/ What determine the quality of soil?
Ans: Amount of living things and non- living organic materials determine the quality of soil like earth worm, insects, lizard and plants.

All organisms directly or indirectly need soil

4. **Light**

Q/ Why plants are producer?

Ans: Because they produce their own food and also they are food source for human and some animals.

Q/ Why plants need sunlight?

Ans: To produce their food by photosynthesis.

Q/ Why plants grow faster in spring and summer more than in autumn and winter?

Ans: Because there are more amount of light in these seasons.

Ecosystem

Ecosystem: It is a system formed from a group of organism and abiotic factors which found in their environment together.

NOTE: Organisms that live in same ecosystem depend on each other in many ways.

Q/ List the types of ecosystem.

Ans: 1- Aquatic ecosystem 2- Terrestrial ecosystem 3-Micro ecosystem

Q/ Give the examples for aquatic ecosystem.

Ans: 1- Oceans 2- Seas 3- Rivers 4- Lakes 5- Pools 6- Damps

Q/ Give the examples for terrestrial ecosystem.

Ans: 1- Green land 2- Deserts 3- Caves 4- Valleys 5- Mountains

Q/ Define micro ecosystem and give example for it.

Ans: It is a special area where specific organism can live. For example ants where live in bark of a plant.

Ecological balance

It is feeding relationships between organisms balance the ecosystem they live.

Q/ What are the groups of organisms according type of feeding?

OR (List or numerate the kinds of organisms according type of feeding)

Ans: We classify organisms into three groups according type of feeding:

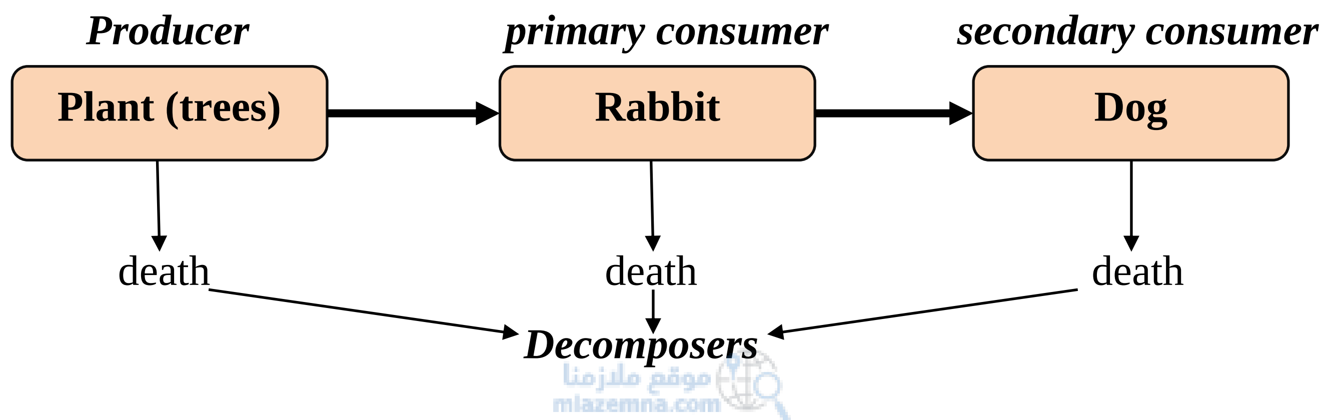
1- producers 2- consumers 3- decomposers

1. **Producers:** Organisms which can produce their own food by using sunlight energy, water and carbon dioxide in presence of chlorophyll such as plants, trees and flowers.

2. **Consumers:** Organisms which feed on other organisms such as animals and human.
- Animals that feed plants are called primary consumers.
- Human and animals feed on other animal are secondary consumers.

3. **Decomposers:** Organisms feed on dead organisms and convert them into inorganic material like bacteria and fungi.

*Q/*Draw an example for feeding relationship between organisms.

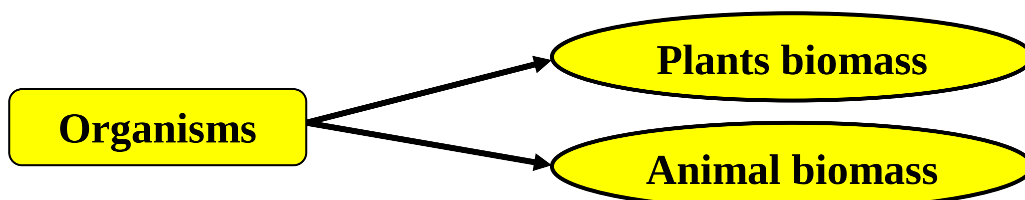


Ecological pyramids

- The values of some ecological factors can be shown in a pyramid for a concrete explanation.
Ex: energy pyramid and biomass pyramid.

1- Pyramids of biomass

Q/ Define pyramid of biomass and give example for it.
Ans: Biomass means living weight and it is a quantitative estimate of the total mass or amount of living material in a particular ecosystem.
Ex: The total weight of the roots, steams and spikes of wheat in a one hectare wheat field is called biomass.

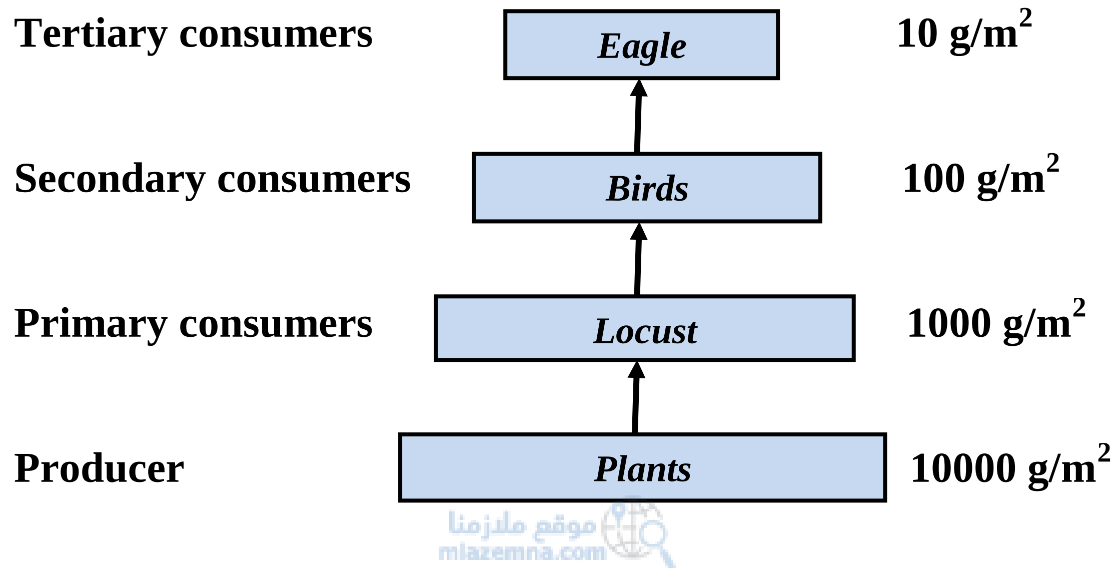


Q/ what are the characteristics of biomass?

Ans:

1. Biomass decrease from producers to consumers.
2. The organisms in the chain convert only10% of the energy in food into biomass.
3. Biomass decreases up to the end of the chain or pyramid.

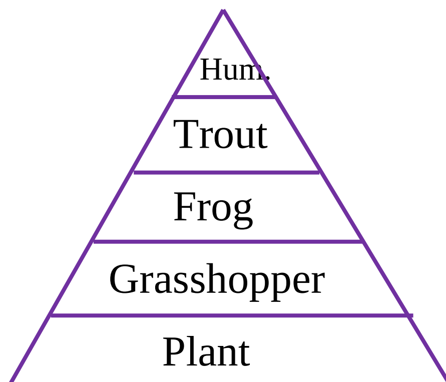
Q/ Draw a chart to give example of food chain for pyramids of biomass.



2-Pyramid of numbers

It is the total of numbers of organisms at each tropic level in a given ecosystem

Ex. Plant ⟶ Grasshopper ⟶ Frog ⟶ Trout ⟶ Human



1.he number of individuals is highest at the bottom of the pyramid.
2. lowest at the top.

3- Pyramid of energy

It indicates the energy content in the biomass of each tropic level and it is the best way to explain the flow of nutrients in an ecosystem.

Q/ What are the features of energy pyramid?

Ans:

1. Only 10% of the energy is captured at each step from producer to consumer.
2. The amount of energy at the end of the chain is the lowest.

Q/ What does the pyramid of energy indicate?

Ans: It indicates the energy content in the biomass of each tropic level.

Food chain

Q/ What does food chain consist?

Ans: it consists of producers, consumers and decomposers.

Q/ Why all organisms need energy?

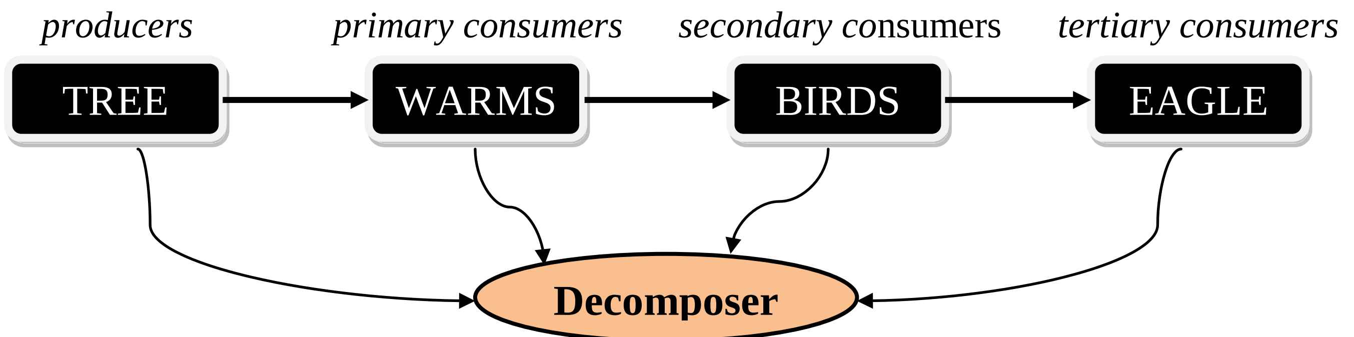
Ans: To live and complete their life cycle.

Q/ What is the main source of energy?

Ans: The main source of energy is the radiant energy from the sun.

NOTE: The radiant energy from the sun it is unusable by all organism.

Food chain: It is a food relationship in ecosystem between producers, consumers and decomposers organisms to move and circulate the energy between them inside the chain.



Biomes

Q/ Howcan the biosphere be divided?

Ans: The biosphere can be divided into regions called biomes.

Biome: It is a large region that has a distinct combination of plants and animals.

Climate: It is a factor in determining the type of biome that occurs.

Q/ What determines the kind of biome in a certain area?

Ans: The main factor that determines the kind of biome in a certain area is climate.

Q/ What are the factors that determine the climate biome?

*Ans:*The climate biome is determined mainly by temperature and precipitation.

NOTE: the average temperature decreases from equator to the poles.

Q/ Where is the same kind of biome found?

Ans: The same kind of biome is found at the same latitude or distance from the equator in different parts of the world.

Q/ Numerate the terrestrial biomes.

Ans: 1- Deciduous forests 2- Deserts 3- Tropical forests

*Q/*What are the characteristics of deciduous forest?

1. Climate changes from the north to the south.

a. The northern parts are snowy and the soil is frozen.

b. The southern parts are rainy and temperate.

2. The annual rainfall is regular.

3. Examples for animals (deer, beer, wolf, mountain lion, fox, mouse, wild turkey, woodpecker) and some reptiles, amphibians and insects.

Q/ What are the characteristics of deserts?

1. The temperature is very high during the day and falls suddenly at night.

2. Rainfall is very low, as is moisture.

3. Animals that need little water or store water can live in the desert.

4. Animals like (fox, rabbit, antelope, lizards, snakes) and some insect species are present.

Q/ What is the characteristics of tropical forests?
1. Annual rainfall is high and regular.
2. High temperatures and moisture continue throughout the year.
3. This biome has a rich fauna as well, including:
a. Hibernating animals.
b. Migrating animals.

Pollution

Pollution: It is the accumulation of unwanted or harmful substances into the environment.

Q/ What are the causes of pollution?
Ans: Pollution is caused by human activities.

Q/ What are the results of human activities?
Ans: Human activities are resulted in extinction of various species of organisms on earth, like the dodo bird and the dusky sea side sparrow.

Q/ Numerate the kinds of pollution.
Ans: 1- Water pollution 2- Soil pollution 3- Air pollution 4- Acid rain
5- Noise pollution 6- Radiation

1. Water pollution

. Water is one of the most essential necessities of life.
. Drinking water is important for health.

Q/ What pollutes the water?
Ans: Factories constructed near rivers and lakes pollute the water.

Q/ What are the effects of water pollution on organisms?
Ans: Some organisms die while others carry toxic chemicals in their bodies.

Q/ What are the reasons of water pollution problem?
Ans:
1- Contamination caused by living compounds that cause disease.
2- Organic and inorganic compounds that are discharged by factories and house sewerage cause contamination.
3- Heat contamination produced by the nuclear-reactor cooling and discharged the factory hot water into rivers and lakes.

4- Kinetic pollution is produced by the movement of boats and ships or from damps.

Q/ How Organic and inorganic compounds are discharged in the water?
Ans: They are discharged by factories and house sewerage and cause contamination.

Q/ How does the heat contamination happen?
Ans: It happens by the nuclear-reactor cooling and discharged the factory hot water into rivers and lakes.

Q/ How is kinetic pollution produced?
Ans: It is produced by the movement of boats and ships or from damps.

Q/ What the results of drinking people polluted water?
Ans: People are vulnerable to contagious diseases like cholera, diarrhea and typhoid.

2. Soil pollution

Q/ What pollutes soil?
Ans: many chemical compounds pollute soil.

Q/ How are pollutants transform to the soil.
Ans: Pollutants are transforming to the soil by *irrigation*, *rain* and *wind*.

Q/ How does pollution may occur?
Ans: Pollution may occur as a result of using pesticides or from factories waste like gases, radiant and chemical wastes (plastics, metals, woods, paper and packages).

Q/ How do pollutants transform from soil to people?
Ans: Pollutants are dissolved in soil and the plants absorb them and then they enter into their tissues. When the animals are fed with such plants, the pollutants will be moved to animal tissues as well. These can be transferred to people as a result of feeding from such plants and meat and dairy food from such animals.

Q/Why do we use herbicidal chemicals?
Ans: We use herbicidal chemicals to kill weeds and clear land but also have side effects.

Q/ What do we use to kill weeds and clear land?
Ans: We use herbicidal chemicals to kill weeds and clear land.

3. Air pollution

The tiny layer surrounding the earth is the basic source of air. All living things need and depend on air.

Q/ Why all living things need air?
Ans: To carry out their life process.

Q/ What does air contain?
Ans: Air contains different gases that they have stable ratios, such as:
- Oxygen 21%
- Nitrogen 78%
- Carbon dioxide 0.03%
- Noble gases are 1% (Argon and Helium).
- Vapor water (1% in cold and dry air) to (4% during humid season in the tropical areas).

Q/ What will happen if any change in the rate of air contents occurs?
Ans: Any change in the rate of air with foreign particulars that are contained in air will cause contamination of air.

Q/ What are the main sources of air pollution?
Ans:
1. Low quality fossil fuels.
2. Exhaust released from vehicles.

> **NOTE:** Usually the air pollution from fossil fuels or vehicles is temporary but if stay longer in the air, it may cause death.

Q/ What will happen if the pollution stays in the air?
Ans: It may cause death.

Q/ What are the main factors that cause the air pollution with CO_2 gas?
Ans: The main factors are
1. CO_2 gas releases as a result of fire such as forest fires which are the most common of these.
2. CO_2 gas is released into the environment in vehicle exhaust.

4. Acid rain

Normal rain water has *very little* acid.

Q/ how does carbonic acid form in the air?

Ans: Acids in the air react with water vapor and form carbonic acid.

Q/ What are the reasons that cause the formation of sulphuric acids and nitric acids in rain clouds?

Ans: Emission of sulphur dioxide and oxides of nitrogen from power stations, factories and motor vehicles cause the formation of sulphuric acids and nitric acids in rain clouds.

Q/ What will happen if the rain falls through polluted air?

Ans: The rain picks up more of these gases and increases its acidity and this will cause a real environmental catastrophe.

*Q/*Why does every country must be sensitive to the acidic clouds and take preventive measures?

Ans: Because when the rain falls from the acidic clouds this will cause a real environmental catastrophe.

Q/ Does the acid rain stay in the soil only?

Ans: No, it doesn't. Acid rain is carried from soil to rivers, streams and lakes.

Q/ What is the effect of acid rain on the lakes?

Ans: The effect of acid rain is greater on the lakes than the rivers and streams, it increases the acidity of the lake water and the ratio of metal salts. As a result, natural life is threatened.

Q/ How are sulfuric acid and nitric acid produced in the air? What the effect of this solution?

Ans: They are produced from $\mathbf{SO_2}$ and $\mathbf{NO_2}$ gases that are released into the air and mix with water vapor. When this solution falls as acid rain, it causes damage to all organisms and the environment.

5. Noise pollution

Sound is such a common part of everyday life. It provides enjoyments through listening to music or birdsong. It allows spoken communication.

Noise pollution: The sounds that disturb humans both physiologically and psychologically.

In natural conditions, birds, wind or water sound doesn't disturb us.

Q/ Classify the noise according to its source.
Ans:
1. Transport (traffic) noise.
2. Industrial noise.
3. Social noise.

Transport (traffic) noise: The noise that comes mainly from trains, planes, cars, buses, trucks and motorbikes and each of these produces noise in a variety of different ways.

Social noise: The noise that includes the noises made by people in parks and at sporting events, as well as radio and TV sounds.

Q/ What does intense noise cause?
Ans: Intense noise may rupture the eardrum and causes hearing problem.

Q/ What are the effects of high levels of noise on people?
OR (What does high levels of noise cause on people?)
Ans: 1. Experience hypertension 2. Fast breathing rate 3. High pulse 4. Stress 5. Discomfort 6. Anger 7. Behavioral problem

6. Radiation

Radiation: It is the process in which energy is emitted as particles or waves.

The sun radiates energy continuously.

Radiation pollution: It is a type of pollution that happens because humans use radioactive substances.

Q/ Why does radiation pollution exist?
Ans: Radiation pollution exists because humans use radioactive substances.

Q/ Why people started using nuclear power?
Ans: Energy produced from dams and thermal plants was insufficient and people started using nuclear power.

Q/ How nuclear power is produced?
Ans: The fission of radioactive isotopes is used to produce energy.

Q/How the countries use the nuclear energy?
Ans: Countries made ships, submarines and aircraft carriers that run on nuclear energy. They are very efficient economically. In the other side, countries made bombs.

Q/Why are the unclear machines dangerous?
Ans: Because in the event of an accident, malfunction or technical problem they are a potential threat to the environment and humanity.

Q/ How does radiation affects the environment?
Ans: Radiation affects the environment both:
1- ***Physically:*** nuclear trails and explosions spread dust and smoke which block sunlight.
2- ***Biologically:*** the biological effect of radiation is the damage to living think.

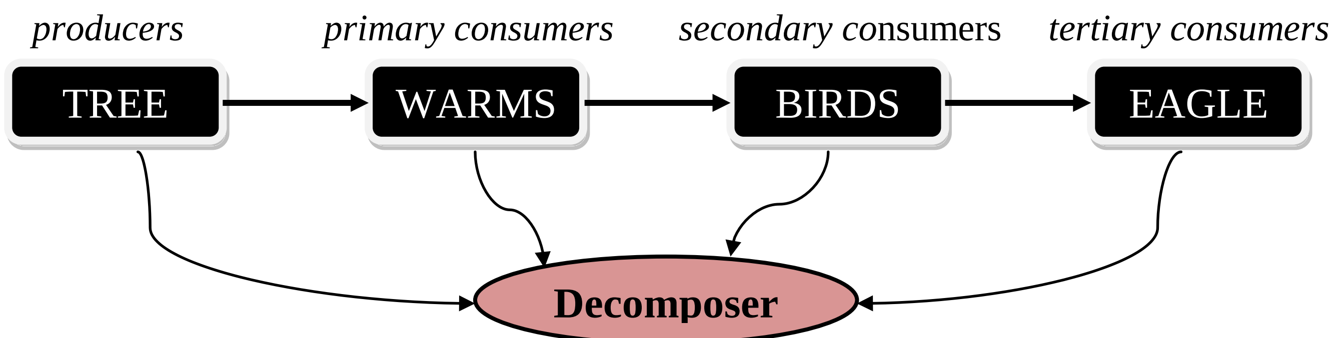
Q/ What are the measures that must be taken to reduce the dangers against environment?
Ans:
1. The west from factories should be recyclable. In this way we can save the raw materials and also prevent the pollution of the environment.
2. Fossil fuels used in heating should be high in calories and low in toxic substances so that air pollution is reduced.
3. Chimneys of factories and houses, and exhausts of cars should have filtering devices to reduce toxic substances in the air.
4. Tree planting should be encouraged so that the gas balance in the atmosphere is maintained and air pollution is reduced.
5. Recyclable materials should be collected and use again.
6. Recyclable materials should be used as much as possible.
7. Everyone should be trained to be aware of environmental problems.

Q/Why the waste of factories should be recyclable?
Ans: To save the raw materials and also prevent the pollution of the environment.
Q/ Why we should have filtering devices for Chimneys of factories, houses, and exhausts of cars?
Ans: To reduce toxic substances in the air.



B. Review Questions

1**.** Define the food chain and draw an example for it?
Ans: ***Food chain:*** It is a food relationship in ecosystem between producers, consumers and decomposers organisms to move and circulate the energy between them inside the chain.



2. Write the types of organisms according to type of feeding and give an example for each?

Ans:

1- Producers ⟶ trees and flowers

2- Consumers ⟶ animals and human

3- Decomposers ⟶ bacteria and fungi

3. Write the types of ecosystem and give an example for each?

Ans:

1- Aquatic ecosystem ⟶ rivers

2- Terrestrial ecosystem ⟶ deserts

3- Micro ecosystem ⟶ ants where live bark

4. Write the abiotic factors?

Ans: 1- Temperature 2- Water 3- Soil 4- Light

5. Write the four main layers of earth?

Ans: 1- Crust 2- Mantle 3- Out core 4- Inner core

C. True or false

1. Earth formed 4.6 billion years ago. **T**
2. The outer core is the hottest part of earth.**F**
3. Virus is a kind of parasite. **T**
4. Caves is an example for terrestrial ecosystem.**T**
5. Noise pollution causes the stress in human.**T**

D. Fill in the blanks correctly

1. A food chain consists of *producers*, *consumers* and *decomposers*.
2. *Oceans* and *seas* are examples for aquatic ecosystems.
3. Living of two different organisms together is called as *symbiosis*.
4. The first living organisms on earth are *protists*.
5. Living things that effect on life of organisms on this environment is called as *biotic factors*.

E. Multiple choices

1. Which of the following not abiotic factor?

A. Temperature

B. Soil

C. Apple tree

D. Light

***Ans:* C**

2. Which of the following is not a kind of ecological pyramids?

A. Pyramid of energy

B. Pyramid of numbers

C. Pyramid of ecology

D. Pyramid of biomass

***Ans:* C**

3. ----------------- is the certain factor in determining the type of biome?

A. Food chain

B. Plants

C. Producers

D. Climate

***Ans:* D**

4. Which one of the following does not causes the noise pollution?

A. Door bell

B. Train noise

C. Social noise

D. Bird singing

***Ans:* D**

DICTIONARY CHAPTER (8)

Ecology	علم البيئة	Origin of earth	أصل الارض
Planet	كوكب	Support	يدعم او يساند
Considering	نأخذ بعين الاعتبار	Some matter	نفس المواد
Solar system	نظام شمسي	Processes	العمليات
Energy	طاقة	Began	بدأت ، نشأت
Cloud of gases	غيمة من الغازات	Galaxy	المجرة
Atmosphere	الغلاف الجوي	Composition	مكونات
Rock	صخرة	Layer	طبقة
Dens	كثيف	Center	المركز
Crust	القشرة	Thin	رقيق
Outer	خارجي	Inner	داخلي
Relative	نسبي	Varies	تنوع
Ocean floor	قاع المحيط	Tectonic plates	طبقة أدمة الارض
Combination	مزيج	Mantle	غلاف
Slowly	ببطئ	Boundaries	حدود
Bump up	ضخ	Against	ضد
Earthquake	زلزال	Outer core	اللب الخارجي
Iron	حديد	Inner core	اللب الداخلي
Surface	السطح	Protist	البدائيات / وحيدة الخلية
Oceans	المحيطات	Fungi	فطريات
Ferns	السرخسيات	Dinosaurs	الدايناصورات
Extinct	منقرضة	Fossil	متحجرات
Preserved	محفوظ	Remains	بقايا
Impression	مطبوعة / مختومة	Insects	حشرات
Biosphere	المحيط الحيوي	Capable	قادر
Altitude	الارتفاع العمودي	Terrestrial animals	حيوانات تسكن اليابسة
Deep	عميق	Suitable conditions	ظروف مناسبة
Relationship	علاقة	Biotic factors	العوامل الحياتية
Effect	تؤثر	Parasitism	التطفل
Host	مضيف	Harm	مؤذي / ضار

Symbiosis	التعايش	Commensalism	تعايش بدون ضرر
Predation	الافتراس	Interaction	تفاعل
Predator	المفترس	Prey	الفريسة
Attacked	تهاجم	Kill	يقتل
Result	النتيجة	Death	الموت
Abiotic factors	عوامل لا أحيائية	Temperature	درجة الحرارة
Pole bear	دب قطبي	Desert camels	جمال الصحراء
Climate	مناخ	Date palm	النخيل
Amphibian	البرمائيات	Nearby	بالقرب
River	نهر	Aquatic plants	النباتات المائية
Water lily	زهرة زنبق الماء	A hydrophate	محب للماء
Adapted	يتكيف	Environment	بيئة
Wide leave	الاوراق العريضة	Placement	وظيفة
Stomata	ثغور صغيرة	Upper surface	السطح العلوي
Evaporation	عملية التبخير	Quality	نوعية
Earth worm	دودة الارض	Lizard	سحلية
Directly	مباشر	Indirectly	غيرمباشر
Producers	منتجات	Faster	اسرع
Grow	ينمو	Ecosystem	النظام البيئي
Depend	يعتمد	Aquatic ecosystem	النظام البيئي المائي
Terrestrial ecosystem	النظام البيئي لليابسة	Micro ecosystem	نظام بيئي ميكروي صغير
Caves	كهوف	Valleys	الوديان
Mountain	جبل	Ecological balance	التوازن البيئي
Feeding relationship	العلاقات الغذائية	Consumers	المستهلكات
Primary	أولي	Secondary	ثانوي
Decomposer	المحللات	Organic material	مواد عضوية
Inorganic material	مواد لا عضوية	Convert	تحول
Pyramid	هرَم	Value	قيمة
Explanation	شرح / تفسير	Concrete	محددة / معينة
Biomass pyramid	الهرم الكتلي	Quantitative	كمّي / مقداري
Estimate	تقدير	Spikes of wheat	سنابل الحنطة
Tertiary	ثلاثي	Eagle	صقر
Locust	جراد	Trophic level	المستوى الغذائي الافقي
Bottom	اسفل / القعر	Indications	دلائل
Flow	جريان / سيلان	Food chain	السلسلة الغذائية
Radiant energy	الطاقة الاشعاعية	Unusable	غير صالحة للاستعمال
Biomes	الاقاليم الحياتية	Region	منطقة
Distinct	متميزة / واضحة المعالم	Precipitation	هطول الامطار
Equator	خط الاستواء	Pole	القطب

Latitude	خط العرض	Deciduous forest	الغابات النفضية
Annual	سنوي	Rainfall	هطول الامطار
Regular	منتظم	Deer	غزال
Bear	دب	Wolf	ذئب
Fox	ثعلب	Wild turkey	الديك الرومي البري
Reptiles	الزواحف	Suddenly	فجأة
Moisture	رطوبة	Antelope	الظبي
Hibernating	سبات	Migrating	تهجير
Pollution	التلوث	Accumulation	تكديس / تراكمات
Unwanted	غيرضروري / غير مطلوب	Substance	مواد
Causes	أسباب	Various spices	انواع متعددة
Dusky seaside sparrow	العصفور الساحلي	Hygiene	نظافة
Health	صحة	Constructed	شيّدت
Toxic chemical	مواد كيمائية سامة	Suffering	تعاني
Running water	الماء المندفع	Daily use	الاستعمال اليومي
Referred	تشير الى	Reasons	أسباب
Contamination	التلوث	Living compound	تجمعات حية
Discharge	تطلق / تتخلص من	Factories	المعامل / المصانع
Sewerage	مياه المجاري	Nuclear reactor	المفاعل النووي
Kinetic pollution	التلوث النشط	Boat	قارب
Ship	سفينة	Damps	المياه الضحلة
Especially	خاصة	Vulnerable	عرضةً
Contagious	للعدوى	Disease	مرض
Transform	تـنـتـقـل	Irrigation	السقي
Wind	رياح	Pesticides	المبيدات الحشرية
Factories waste	فضلات المعامل	Radiant	اشعاع
Wood	خشب	Metal	معدن
Packages	صناديق فارغة	Dissolve	تذوب
Absorb	تمتص	Tissues	أنسجة
Fed	تتغذى	Transferred	نقل / تنقل
Herbicidal chemicals	كيمياويات قاتلة للاعشاب	Widely	بشكل واسع
Weeds	الاعشاب الضارة	Side effect	تأثير جانبي
Globe	الكرة الارضية	Stable ratio	نسبة ثابتة
Vapor water	بخار الماء	Humid	الرطب
Tropical	الاستوائي	Foreign particles	جسيمات غريبة
Low quality	نوعية رديئة	Exhaust	العادم
Released	تحرر	Temporary	مؤقت
Acid rain	امطار حامضية	Emission	أنبعاث
Vehicles	عربات / مركبات	Picks up	تمتص / تلتقط

Catastrophe	كارثة	Sensitive	حساسة
Preventive	وقائي	Stream	جدول
Metal salt	الاملاح المعدنية	Damage	ضرر
Noise	ضوضاء	Communication	تواصل
Alert	منبه	Warn us	يحذرنا
Waiting siren	انتظار صافرة الانذار	Industrial	صناعي
Social noise	ضوضاء اجتماعية	Intense	شديد
Ear drum	طبلة الاذن	Hypertension	ارتفاع ضغط الدم / شد عصبي
Breath	تنفس	Behavior	سلوك
Emitted	منبعثة	Particles	جسيمات
Waves	موجات	Bring	تجلب
Radio active	النشاط الاشعاعي	Thermal	حراري
Insufficient	غير كافي	Isotopes	النظائر
Air craft	الطائرات	Economically	اقتصادي
Mal function	سوء عمل	Threat	يهدد
Humanity	البشرية	Bomb	قنابل
Nuclear trails	الاختبارات النووية	Measures	قياسات
Raw	خام	Fuel	وقود
Reduce	يقلل	Chimneys	مداخن
Toxic substance	مواد سامة	Tree planting	زراعة الاشجار
Encourage	تشجيع	Aware	واعي / مدرك

CHAPTER 9

First Aid

First Aid: Is the initial care in emergency cases for the injured or sick.

Q/ Who is doing first aid and when?
Ans: it is care administered by a concerned person as soon as possible after an accident or illness

*Q/*What are the advantages of first aid?
Ans: it is promo care and attention that sometimes means the difference between life and death or between a full or partial recovery.

*Q/*Why cannot anyone do first aid in general?
Ans: because it is Limitations. Not everybody is a doctor. But it is an essential and vital part of the total medical concept.

*Q/*What are the basic aims of first aid?
1- To save life.
2- To protect the casualty from getting more harm.
3- To reduce pain and priorities of casualty treatment.

Initial Assessment

*Q/*What is the Goal of the initial assessment?
Ans:
1- Visually determine whether there are life-threatening
2- Other serious problems that require quick care.
Like: 1.breathing 2.bleeding 3.shock 4.burn 5.chocking 6.heart attack 7.fractures

*Q/*What are the steps for initial assessment?
Ans:
1- Determine if victim is conscious by tap and shout.
2- Check for ABC as indicated.

a- Check Airway open (head tilt / chin-lift).
b- Check Breathing (look, listen, and feel).
c- Check Circulation (check for signs of circulation).

Note: ABC step by step should not be changed it takes less than a minute to complete unless first aid is required at any point.

Bleeding Control: *(For External Bleeding)*

*Q/*What are the methods to control the external bleeding?

Ans:

1- Direct pressure stops most bleeding.
2- Wear medical exam gloves (if possible)
3- Place a sterile gauze pad or a clean cloth over wound.
4- Elevate injured part to help reduce blood flow
5- Combine with direct pressure over the mound this will allow you to attend to other injuries or victims.

*Q/*Why we must elevate injured part?

Ans: To help reduce blood flow.

*Q/*What are the locations of pressure points?

Ans:

1- Brachial (Top of elbow)
2- Femoral (Inside upper thigh)

Control Methods for internal bleeding

Q/ What are the signs of internal bleeding?

Ans:

1- Bruises or contusions of the skin.
2- Painful, Tender, rigid, bruised, abdomen, vomiting or coughing up blood.

What to do

*Q/*What are steps for severe internal follow?

Ans:

1- Monitor ABC's (Airway, Breathing, Circulation).
2- Keep the victim lying on his / her left side.

Q/Why must keep the victim lying on (his or her) left side?

Ans: This well to help prevent expulsion of vomit from stomach, or allow the vomit to drain and also prevent the victim from in haling vomit.

3- Treat for shock by raising the victim's legs (8"-12").

4- Seek immediate medical attention.

Q/Give examples for internal bleeding.

Ans:

1- Hemorrhagic stroke.

2- Rupture of blood vessels leakage of blood.

Shock

Q/What does shock refer to?

Ans: Shock refers to circulatory system failure

Q/When does shock that happen?

Ans: Shock happens when insufficient amount of oxygenated blood is provided for every body part.

Q/What are the reasons for the failure of circulatory system?

Ans:

1- Loss of blood due to uncontrolled bleeding or other circulatory system problem.
2- Loss of fluid due to dehydration or excessive sweating.
3- Occurrence of an extreme emotional event.
4- Trauma (injury)

Q/What to look for?

1- Altered mental status
2- Pale, cold, and clammy skin, lips and nail beds.
3- Rapid breathing and pulse
4- Anxiety and restlessness.
5- Nausea and vomiting.
6- Unresponsiveness when shock is severe.

Q/ what to do for shock?

Ans: after first treating life-threatening, the following procedures shall be performed.

1- Lay the victim on his or her back.
2- Raise the victim's legs 8"-12" to allow the blood to drain from the legs back to the heart.
3- Prevent body heat loss by putting blankets and coats under and over the victim.

Q/Why raise the victim's legs 8"-12"?

Ans: to allow the blood to drain from the legs back to the heart.

Q/why we must maintain the victim's body temperature?

Ans: because since the victim shocked by noting the symptoms of the cold.

Burns

Burns have been described as:

1. *First degree burns*

Q/what is the characteristic for first degree burns?

Ans: only the skin's outer layer (epidermis) is damaged.

Q/what are symptoms for burns?

1- Redness
2- Mild swelling
3- Tenderness
4- Pain
5- Usually heals without scarring.

Q/what we do for first degree burns?

Ans:

1- Immerse in cold water 10 to 45 minutes or use cold wet clothes.
2- May use other liquids such as aloe, moisturize lotion.

Q/why we use cold water or cold wet cloths in first degree burns?

Ans: because cold stops burn progression.

2. Third-degree burns

Q/ How to know if burns are third degree?

*Ans:*Severe burns that penetrate all the skin layers into under lying fat and muscle.

Q/ What are symptoms for third-degree burns?

Ans: Symptoms include the burned area appears grey-white, cherry- red, or black.

Q/ What are the differences between first degree and third degree.

First degree burns	Third degree burns
1- Only skin's outer layer (epidermis) is damaged 2- Symptoms include redness, mild swelling, tenderness and pain. 3- Heals without scarring	1- Sever burn's that penetrate all the skin layers into under lying fat and muscle. 2- Symptoms include the burned area appears gray-white, cheery red, or black. 3- Heals with scarring.



3. Chemical burns

*Q/*What is the chemical burn and how it is caused?

Ans: The result of a caustic or corrosive substance touching the skin caused by:

1- Acids (batteries)
2- Alkalis (drain cleaners-often more extensive)
3- Organic compounds (oil products)

Q/ What to do for chemical burns?

1- Remove the chemical by flushing the area with water.
2- Brush dry powder chemicals from the skin before flushing.
3- Take precautions to protect expo sure to the chemical.
4- Remove the victims contaminated clothing and jewelry while flushing with water.
5- Flush for 20 minutes all chemical burns (skin, eyes)
6- Cover the burned area with dry, sterile, dressing
7- Seek medical attention (get medical help).

*Q/*How remove the chemical material from chemical burns?
Ans: Remove the chemical by flushing the area with water.

4. ***Electrical burns***

-A mild electrical shock can cause serious internal injuries

*Q/*What to do for electrical burns?
Ans:
1- Make sure the scene is safe.
2- Unplug, disconnect, or turn off the power.
3- Do not contact high voltage wires.
4- Consider all wires live.
5- Do not handle downed lines.
6- Do not come in contact with the person if the electrical source is live.
7- Check ABCs (Airway, Breathing, Circulation.)
8- If the victim fell, check for a spinal injury.
9- Treat the victim for shock by elevating the legs 8”-12” if no spinal injury is suspected.
10-Seek med attention immediately.

Choking

Choking: It is obstruction in the airway.
Q/ What are general precautions for choking?
Ans:
1- If someone is coughing, leave the person done.
2- Do not perform the Heimlich maneuver.
3- Keep eyes on the person.
4- Ask the person if he / she need help.

*Q/*what are signs and symptoms for choking?
Ans:
1- Person is not able to breath or talk due to obstruction, choking sign given, distressed, and panic.
2- Hands wrapped around the neck is universal sign.

Q/What to do for choking for Conscious victim?

Ans: Perform Heimlich maneuver if you properly trained.

a. Approach from behind and wrap arms around the victim waist.
b. Place one fist just above the victim's navel with the thumb side against the abdomen.
c. Put second hand over the first.
d. Press into the victim's abdomen with one up ward thrust.
e. Repeat thrust if necessary.
f. Try to pop the obstruction out with swift thrusts in and up.
g. Continue until the obstruction is relieved or victim collapses.
h. Have someone call for help.

Q/How do you do the Heimlich maneuver?

Ans:

1- Lean the person for the ward a lightly and stand behind him or her.
2- Make a fist with one hand.
3- Put your arms around the person and grasp your fist with your other hand near the top of the stomach just below the center of the ribcage.
4- Make a quick hand movement in ward and upward.

Q/What to do for unconscious victim?

Ans:

1- Ask someone to call 122 for help.
2- Lower victim to floor on back or left side and perform Heimlich maneuver.
3- Open airway with tongue-jaw lift
4- Look inside mouth-if you cannot see anything do not do a finger sweep.
5- Try to give two full rescue breaths
6- If these do not go in reposition the head and give another breath.
7- Perform abdominal thrusts.
8- Continue until successful or help arriver.

Q/What to do for chocking body (less than 1 year old)

Ans:

1- Back blows: place the body face down on your fore arms with baby's head slightly lower than the baby's stomach support the baby's head thrust gently but firmly 5 times between the baby's shoulder blades
2- Chest thrusts: the baby does not start breathing turn the baby over so that the baby is face up on you to rearm. Keep the baby's head lower than the baby's stomach. Put your fingers in the center of the baby's chest and press 5 times.
3- If the baby is still chocking repeat the back blows and chest thrusts until help arrives.

Fractures

There are two types of fractures

1. Simple fractures (closed):The skin is intact and no wound exists anywhere near the fracture site.

2. Open (compound fracture)

Q/ What are the characteristics compound fracture?

Ans:

1- The skin over the fracture has been damaged or broken.
2- The wound may result from bone protruding through the skin.
3- The bone may not always be visible in the wound.

Q/ What are the symptoms of the fractures?

Ans:

1- Tenderness to touch
2- Swelling
3- Deformities may occur when bones are broken causing an abnormal shape.
4- Open wounds break the skin.
5- A grating sensation caused by broken bones together can be felt and sometimes even heard.

NOTE: Don't move the injured limb in an attempt to detect it.

Heart Attack

Q/ When does the heart attack happen usually?

Ans: Heart Attack. Usually that happens when one of the coronary arteries is blocked by an obstruction or a spasm.

Q/How coronary arteries are blocked?

Ans: Coronary arteries are blocked by an obstruction or a spasm.

Q/ What are the signs and symptoms of a heart attack?

Ans:

1- Pressure in chest, fullness, squeezing or pain that lasts more a few minutes or that goes away and come back.
2- Pain spreading to the shoulders, neck, or arms
3- Chest discomfort with lightheadedness, fainting, sweating, nausea or shortness of breath

Q/What to do for the heart attack?

Ans:

1- Call EMS or get to the nearest hospital emergency department with 24 emergency cardiac cares.
2- Monitor victim condition.
3- Help the victim to the least painful position usually sitting with legs up and bent at the knees.
4- Loosen clothing around the neck and midriff.
5- Determine if the victim is known to have coronary heart disease.
6- If the victim is unresponsive, check (ABCs) and start CPR if needs.

Basic First Aid for Wounds

Open Wounds

Q/How do open wound happen?

Ans:

1- A break in the skin's surface that results in external bleeding and may allow bacteria to enter the body that can cause infection
2- The top layer of skin is removed with little or no blood loss.
3- A cut skin with jagged irregular edges and caused by a forceful tearing away of skin tissue.

Q/What to do for the open wound?

Ans:

1- Wear gloves (if possible) and expose wound.

2- Clean wounds to prevent infection

3- Wash shallow wound gently with soap& water from the center out

4- Control bleeding

Q/How could care open wound?

Ans:

1- Remove small objects that do not flush by irrigation with sterile tweezers.

2- If bleeding restarts, apply direct pressure

3- Use roller bandages (or tape dressing)

4- Keep dressing dry and clean.

5- Change the dressing daily or more often if gets wet or dirty.

Q/What is the purpose of a dressing?

Ans: The purpose of a dressing is to

1- Control bleeding

2- Absorb blood and fluid drainage.

3- Prevent infection and contamination.

4- Protect the wound from further injury.

Q/How to dress a wound?

Ans:

1- Always wear gloves (if possible).

2- Use addressing large enough to extend beyond the wound's edges.

3- Cover the dressing with bandages.

Q/Why do we use a dressing large enough?

Ans: Because to extend beyond the wound's edges.

SELF CHECK
FIRST AID

B. Review Questions

1. What does ABC mean in emergency?

Ans:

A= Airway open? Head tilt / chin lift
B=breathing? Look, listen and feel.
C=Circulation? Check for signs of circulation.

2. What we have to do during electrical burns?

Ans:

1- Make sure that scene is safe.
2- Unplug disconnect, or turn off the power.
3- If that is impossible, call the Power Company or EMS for help.
4- Do not contact high voltage wires.
5- Consider all wires live.
6- Do not handle downed lines.
7- Do not come in contact with person if the electrical is live.
8- Check ABCs. (Airway, Breathing, Circulation).
9- If the victim fell, check for a spinal injury.
10- Treat the victim for shock by elevating the legs 8”-12” if no spinal injury is suspected.
11- Seek medical attention immediately.

3. What are the signs of internal bleeding?

Ans:

1- Bruises or contusions of the skin.
2- Painful, tender, rigid, bruised abdomen.
3- Vomiting or coughing up blood.

4. What we have to do when a brother is in shock?

Ans:

1- Lay the victim on (his or her) back

2- Raise the victim leg’s (8”-12”) to allow the blood to drain from the leg’s back to the heart.

3- Prevent body heat loss by putting blankets and coats under and over the victim.

5. Write the how to bandage a wound?

Ans:

1- Always wear gloves.

2- Use addressing large enough to extend beyond the wound’s edges.

3- Cover the dressing with bandages.

C. True or False

1- Do not move the injured limb in fracture. **T**

2- Remove the chemical by flushing the area with water in chemical burns. **T**

3- Always stay calm during emergency. **T**

4- Swelling is a sign of fracture. **T**

5- Immerse the burned area in cold water. **T**

D. Fill in the blanks correctly

1- Acids , Alkalis and organic compounds

2- Brachial (Top of elbow) and Femoral (inside upper thigh)

3- 122

4- Heimlich maneuver

5- A airway open , B (Breathing) and C (Circulation)

DICTIONARY
CHAPTER (9)

First Aid	الاسعافات الاولية	Initial	الابتدائي
Care	عناية	Injured	المصاب
Sick	المريض	Administered	اعطاء دواء
Accident	حادث	Illness	مرض
Prompt care	عناية فورية	Attention	اهتمام
Full	كامل	Partial	جزئي
Recovery	شفاء	Limitation	تحديد
Vital	حيوي	Emergency	اسعافات
Field	مجال	Casualty	مصاب
Harm	ضار	Pain	الم
Priorities	الافضلية	Treatment	علاج
Visually	نظريا	Determent	تحديد
Quick	سريع	Rupture	تمزق
Blood vessels	اوعية دموية	Breath	تنفس
Bleeding	نزيف	Shock	صدمة
Burn	حروق	Chocking	اختناق
Heart-attack	اصابات قلبية	Fractures	كسور
Victim	ضحايا	Conscious	واعي
Shout	صياح ،المناداة عليه	Airway	ممر التهوية
Chin lift	يرفع الذقن	Direct pressure	الضغط المباشر
Gloves	قفازات	sterile gauze pad	ضمادات الشاش المعقمة
Wound	جرح	Elevation	رفع
Bruises	كدمات	Contusion	رضات
Tender	سهل الكسر	Rigid	صلب ، قاسي
Bruised	مكدوم	Vomiting	تقيء
Cough	سعال	Lying	استلقاء
Raising	ارفع	Unplug	رفع البلك (قابس الكهرباء)
Leakage	تسرب	Failure	فشل
Circulation system	جهاز الدوران	Insufficient	غير كافي

Fluids	سوائل	Dehydration	جفاف
Sweating	تعرق	Trauma	جرح
Altered mental status	تغيرات عقلية	Pale	شاحب
Pulse	نبض	Anxiety	قلق
Nausea	غثيان	Unresponsiveness	عدم الاستجابة
Drain	يصب	Prevent	تجنب
Symptom	اعراض	Epidermis	بشرة
Redness	احمرار	Welling	انتفاخ
Scarring	ندب ، أثار	Immerse	غمر، غطس
Penetrate	تخترق	Ointment	مرهم
Flushing	شطف	Contaminated	ملوث
Spinal injury	اصابة النخاع الشوكي	Obstruction	اعاقة انسداد
Waist	خصر	Thumb	ابهام
Abdomen	بطن	Thrust	رفع
Collapses	انهيار	Fist	قبضة
Stomach	معدة	Ribcage	القفص الصدري
Chest	الصدر	Blow	نفخ